

The *Aedes* Mosquitoes of the Philippine Islands

II. Subgenera *Skusea*, *Christophersiomyia*, *Geoskusea*, *Rhinoskusea*, and *Stegomyia* (Diptera, Culicidae)¹

KENNETH L. KNIGHT AND WILLIAM B. HULL²

INTRODUCTION

THIS IS THE SECOND of a series of three papers dealing with the *Aedes* fauna of the Philippine Islands. Part I (Knight and Hull, 1951a) contained the general introduction, the keys to the adults and larvae, and the treatments of the species belonging to the subgenera *Mucidus*, *Ochlerotatus*, and *Finlaya*. The part given here reports on the species of the subgenera *Skusea*, *Christophersiomyia*, *Geoskusea*, *Rhinoskusea*, and *Stegomyia*.

All of the necessary introductory information is given in Part I and only the explanations necessary for an understanding of the abbreviations and symbols used are repeated here.

A dagger (†) denotes types that have been examined by us.

The following abbreviations are used in the descriptions. Adult: *apn*, anterior pronotal lobe; *ppn*, posterior pronotal lobe. Larva: *isc*, inner or upper caudal hair of the anal segment; *osc*, outer or lower caudal hair of anal segment; *lh*, lateral hair on anal plate.

Figures are not drawn to scale.

The following abbreviations are used in the species distribution sections to denote the present locations of specimens examined. A.N.S.P., Academy of Natural Sciences of

Philadelphia; C.A.S., California Academy of Sciences; U.S.N.M., U. S. National Museum; B.M., British Museum (Natural History); C.C., Cornell University; R.K.L., specimens from the collection of Naval Medical Research Unit No. 2 on which nothing has been previously published and which are now deposited in the U. S. National Museum, the Johns Hopkins University, the California Academy of Sciences, the British Museum, and the Knight collection.

SYSTEMATICS

Subgenus SKUSEA Theobald

1903. *Skusea* Theobald, Mon. Cul. 3: 291.

Genotype: *pembaensis* Theobald (Africa).

ADULT: Distinguished from all the other subgenera in the Philippines by the combination of being without special markings on the legs and scutum; having the male palpi as long as, or slightly longer than, the proboscis; and having the scales of the vertex and scutellum broad and flat. Other characters are: Dark species without special ornamentation. Male palpus straight, slender, a very few short hairs at the apices of the distal three segments. Dorsocentral and acrostichal bristles present. Paratergite not scaled. Lower mesepimeral bristles absent. Fore and mid-tarsal claws of male unequal, the smaller claw with a very small tooth; hind claws equal, simple. Tarsal claws of female equal, simple. *Terminalia*: Basistyle rather short and broad, with an apical lobe and with complicated basal lobes; dististyle appendage apical. Mesosome sim-

¹The opinions or conclusions contained herein are those of the authors and are not to be construed as official or reflecting the views of the Navy Department or of the naval service at large. Manuscript received October 23, 1951.

²Naval Medical Research Institute, Bethesda, Maryland. Lieutenant Commander and Lieutenant, respectively, MSC, USN.

ple, tapered apically to a sharp point, outer portion more heavily sclerotized. Claspettes absent.

LARVA: Separable from all the other aedine subgenera in the Philippines by the combination of the following: Antennal hair short, single, inserted at about the apical two thirds. Head hair 6 directly anterior to 5, 4 mesad of 6, 7 on a level between 5 and 6, all of them inserted far forward. Comb scales numerous, in a patch. Siphon without an acus; tuft single, hardly beyond middle; pecten teeth evenly arranged. Anal plate bare. Ventral brush consisting of 9–11 tufts, all but basal 1–3 tufts borne on a laterally unconnected barred area. Habitat—chiefly in axils and stumps of nipa palms in mangrove areas, but also in other types of container habitats in mangroves.

DISTRIBUTION: Five species are known at present, two of which occur in the Philippines. The others are *pembaensis* Theobald from Africa, *dasyorrbus* King and Hoogstraal from New Guinea, and *lamelliferus* Bohart and Ingram from the Caroline Islands. *A. kabaensis* Brug has been removed by us to the subgenus *Geoskusea*.

SYSTEMATICS: The four Pacific species are remarkably uniform in the general details of the adult and the larva. However, the African form differs markedly in the character of the mesosome, having it in the form of a simple tube. Also, the last two palpal segments are slightly thickened and hairy, and the female has lower mesepimeral bristles.

Aedes (Skusea) amesii (Ludlow)

1903. *Stegomyia amesii* Ludlow, N. Y. Ent. Soc., Jour. 11: 139 (female). Type locality: Philippines. Oras, Samar. Tacloban, Leyte. Twin Peaks, Banquet, Cagayan Province, Luzon (Ames). Type: 1 female (holotype) in U.S.N.M.† This is from Oras. No other type material remains.

1908. *Stegomyia Fusca* Leicester (nec Osten-Sacken, 1877), Cul. Malaya, p. 92 (males,

female, larva). Type locality: Malaya. Klang (2 males). Pt. Swettenham (1 female) (Leicester). Type: 2 males, 1 female (co-types) in B. M.†, 1 male with terminalia separated.

1917. *Skusea amesii* Ludlow. Edwards, Bul. Ent. Res. 7: 223. Description of male from Malay Peninsula. Different combination.

1925. *Aedes (Skusea) amesii* (Ludl.). Dyar and Shannon, Insecutor Inscitiae Menstruus 13: 77, 78. In part. Different combination.

1928. *Aedes (Skusea) furvus* Edwards, Bul. Ent. Res. 18: 274 (nom. nov. for *fusca*). Also, redescription of the male described in 1917.

1946. *Aedes (Skusea) amesii* (Ludlow). Hoogstraal and Chamberlain, Wash. Ent. Soc., Proc. 48: 125. Questioningly synonymized *furus*. First description of larva.

ADULT: A very small dark brown species, with all broad dark vertex and scutellar scales and with small laterobasal pale spots on the abdominal tergites.

Male. Wing length 2.0–2.5 mm. **Head:** Proboscis all dark-scaled; slightly longer than the fore femur. Palpus approximately equal to the proboscis (exclusive of labellum) in length, measured range 0.75–1.0 times as long; dark; a very few short hairs at the apices of the distal three segments. Vertex covered with broad scales, these dark except for a transverse subdorsal white band which may be interrupted; a line of dark upright-forked scales along the nape, occasionally one or more along the anterodorsal margin also. **Thorax:** Scutal integument grayish brown; clothed with narrow brown scales. Scutellum with a prominent dense overlapping patch of broad dark scales on each lobe. *Apn* with a few broad dusky scales, *ppn* dorsally with broadened dark scales. Following pleural areas each with a patch of broad silvery-white scales: propleural, dorsal sternopleural, medio-posterior sternopleural, and mesepimeral (below the hair tuft); pleural sclerites rather uniformly grayish brown. **Legs:** Dark-scaled. Fore and mid-tarsal claws unequal, the larger

one simple and the smaller claw with a single very small tooth which is overlooked unless a slide mount is made; hind tarsal claws equal, simple. *Wings*: Brown-scaled. Halter stem pale, knob darker and with dusky scales. *Abdomen*: Tergites dark-scaled, I and II with a band of white scales along the lateral margin, III–VII with a basolateral patch of white scales. Sternites pale-scaled basally, brown-scaled apically. *Terminalia* (this description is adapted from Hoogstraal and Chamberlain, 1946: 125. The abbreviations are those used in their figure): Basistyle densely clothed with scales and numerous long setae; a conspicuous dense row of setae along the full length of the inner tergal margin. Basal lobe very large, divided into three sublobes as follows: a tergal sublobe (BLD) which is bulbous basally, constricted apically, and densely covered with fine hairs; a medial sublobe (BLM) with seven heavy flattened subequal filaments arising from separated elongate bases; and a stout sternal pedicel-like lobe (BLV) bearing two heavy flattened filaments. Basistyle apically with a knob-like tip, this extending beyond base of dististyle and bearing a cluster of striated pointed flattened filaments. Ninth tergite a narrow weakly sclerotized band, lacking lobes or setae.

Female. Differs from male as follows: Palpus approximately one sixth as long as the proboscis. Tarsal claws equal, simple.

LARVA: *Head*: Antenna smooth; antennal hair single, inserted at apical third and extending slightly beyond tip of antenna. Mouth brush with comb-like tips. Hair 4 with 6–10 branches; 5 single, lightly plumose, extending beyond the anterior margin of the head; 6 double (rarely triple), shorter than 5; 7 with 8–17, lightly plumose; 8 with 2–3; 9 with 3–6; 12 with 6–9, large, finely plumose; 13 single; 14 with 1–2; 15 with 2–3; 17 and 18 single; 20 with about 6 fine branches; hairs 4 and 6 well anterior to 7, 4 just within and posterior to 6, 5 lateral to 6. Mentum with 11–14 lateral teeth. *Thorax*: Prothoracic hair 1 with 2–4 branches. *Abdomen*: Dorsolateral hair on

I with 4–9 branches; on II with 6–12. Lateral hair on I single; on II with 2–5, very short; on III–V with 3–4; on VI with 1–2. Pentad hair 1 with 3–5 branches; 3 with 2–4; 5 with 1–2. Comb with many small yellow narrow scales in a triangular patch, each scale rounded and usually slightly enlarged apically and with a complete fringe. Siphon with about apical one fifth paler than remainder; acus absent; index about 3.1 (after Hoogstraal and Chamberlain, 1946: 128); 11–17 pale, ventrally fringed pecten teeth, all approximately equal in length; siphon hair single, finely plumose, inserted just beyond middle and just beyond apical pecten tooth, extending slightly beyond apex of siphon; dorsolateral and ventrolateral basal valve hairs single (occasionally double), unusually long. Anal plate broadly incomplete; *lh* with 1–2 branches, nearly twice as long as the anal plate; *isc* with 7–9, *osc* single; ventral brush of 10 tufts (once 9 and once 11, however), each tuft with 4–8 branches, all but basal 1–3 tufts borne on a barred area; barred area not connected laterally. Anal gills bulbous or finger-like, broadly rounded apically; dorsal pair 1.4–1.8 times longer than ventral pair and 1.7–2.7 times longer than the anal plate.

BIONOMICS: The larvae were commonly collected in the axils and stumps of nipa palms in and along mangrove areas. Less commonly, they were found in tree holes, and once in a half coconut shell in a mangrove area. In the original description of *fusca*, Leicester reported collecting the larvae from the axils of the atap palm.

Adults were collected, always in or at the margins of mangrove areas, from around humans, from vegetation, and from the entrances of crab holes.

DISTRIBUTION: *Specimens examined*. R.K.L. Luzon: Subic Bay, Zambales Prov. (Rozeboom, MacMillan). Samar: Osmena (Rozeboom, Laffoon, Knight). Guirang (Zolick, Knight). Leyte: Hibuanurem Village (Knight, MacMillan). Palawan: Iwahig Penal Colony (Laffoon). Culion (Johnson). Mindanao:

Maasin Village, Zamboanga Prov. (Johnson, Laffoon, Knight). Jolo: Jolo (Johnson, Laffoon). A.N.S.P. Leyte: Tacloban (Roberts).

Literature records. Palawan: Puerto Princesa (Hoogstraal and Chamberlain, 1946: 125). Mindoro: San Jose (personal communication from E. S. Ross).

Known outside of the Philippines from Malaya, Sumatra, and Siam.

DISCUSSION: The systematics of this species have been fully discussed by Hoogstraal and Chamberlain (1946: 125). On the basis of Edwards' (1928: 274) description of *furvus* and the included figure of the male terminalia, they questioningly synonymized *furvus* to *amesii*. The synonymy was questioned because Edwards' figure did not show the setae of the apical lobe to be scale-like.

Since the appearance of the paper by Hoogstraal and Chamberlain, the senior author has had the opportunity of comparing the male terminalia of the Philippine species with that of one of the two cotype males of *furvus* and found them to be conspecific.

Aedes (Skusea) *fumidus* Edwards

Figs. 1, 2

1928. *Aedes* (Skusea) *fumidus* Edwards, Bul. Ent. Res. 18: 274 (males, females, larvae). Type locality: Malaya. Singapore (Given). Type: Male (holotype) in B. M.† Terminalia separated.
1926. *Aedes amesii* (Ludl.). Edwards, Bul. Ent. Res. 17: 119. Larval description.

ADULT: Closely similar to *amesii*. Male terminalia markedly different, however.

Male. Wing length approximately 2.5 mm. Similar to *amesii*, but differing as follows: Palpus usually slightly longer than the proboscis. Mesepimeral scale patch confluent with the dorsal hair tuft. Hind femur usually with pale scaling ventrally on basal half of anterior surface. **Terminalia:** Basistyle densely clothed with scales (omitted in figure) and numerous long setae; a dense row of setae along the full length of the inner tergal margin. Basal lobe conspicuous, divided into

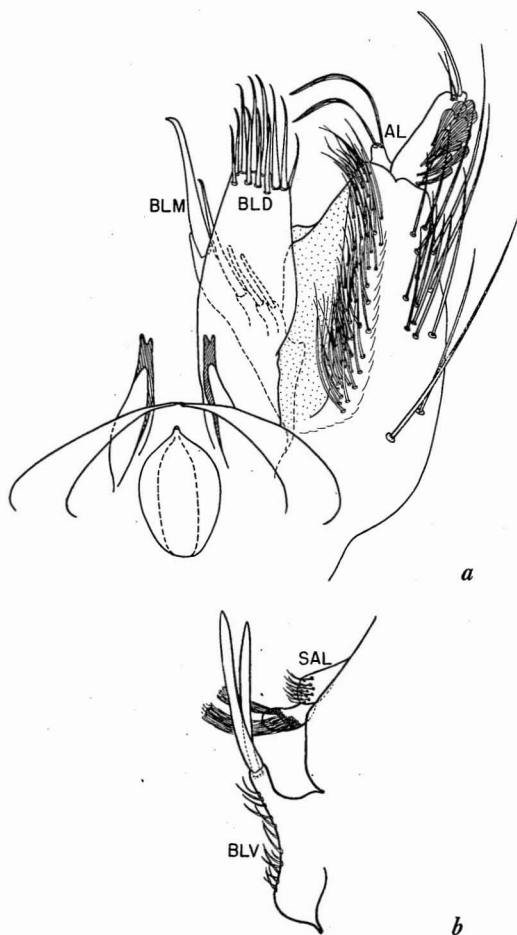


FIG. 1. *A. (Skusea) fumidus*. Male terminalia (Luzon). *a*, Dorsal aspect. Scales omitted from basistyle. The two most ventral lobes, BLV and SAL, are omitted. *b*, Dorsal aspect of lobes BLV and SAL.

three sublobes as follows: a tergal elongate strap-like sublobe (BLD), with prominent stout setae apically and numerous hairs sternally (these latter not figured); a medial sublobe (BLM) with four stout filaments arising from separate elongate bases; and a sternal sublobe (BLV) bearing two heavy flattened filaments (omitted from figure of terminalia but shown detached in Fig. 1*a*). Basistyle sternally with a mesally directed setose double subapical lobe (SAL), and with an apical lobe (AL) that bears two slender elongate scales. Ninth tergite a narrow, weakly sclerotized band, lacking lobes or setae.

Female. Similar to the female of *amesii*, but differing from it (as in the males) in the color of the hind femoral scaling and in the extent of the mesepimeral scale patch.

LARVA: *Head:* Antenna smooth, nearly uniform in diameter throughout; antennal hair single, fine, inserted at about distal one third and extending just beyond apex of antenna. Mouth brushes with comb-like tips. Hair 4 with 13–20 branches; 5 single, rarely double; 6 with 2–3 (4–5 branched in 2 specimens from Subic Bay, Luzon; coll. 1068); 7 with 6–17; 8 double; 9 with 3–4; 12 with 5–8; 13 and 14 single; 15 with 2–3; 17 and 18 single; 20 with 2–6. Mentum with 11–15 lateral teeth. *Thorax:* Prothoracic hair 1 with 3–8 branches; 2 single; 3 with 3–5. Mesothoracic hair 9 with 12–18 branches; 10 and 12 single, stout, long; 11 not seen. Metathoracic hair 9 with 5–9 branches; 10 single, stout; 12 single, much reduced; 11 not seen. *Abdomen:* Dorsolateral hairs on I and II with 6–7 branches (occasionally 5–9). Lateral hair on I single; on II to V with 2–6 branches; on VI single or double. Pentad hair 1 with 3–5 branches; 3 with 3–4; 5 with 1–3. Comb of 80 to 100 small scales in a triangular patch, the entire margin of the scales fringed. Siphon smooth, sclerotization incomplete basally, without acus, index 2.4; 7–15 pecten teeth in a row, with the basal 1–4 teeth off the sclerotized portion of the siphon, the teeth each fringed along entire ventral margin; siphon hair single, rather stout. Anal plate smooth, covering little more than the dorsal area of the segment; *lh* single, stout; *isc* with 5–9 branches, *osc* single; ventral brush of 10 tufts (one specimen with 11) with 1 or 2 off the barred area basally, the tufts with 5–8 branches; barred area not connected laterally. Anal gills finger-like, the dorsal pair about 1.3 times longer than ventral pair, and 2.1–3.5 times longer than the anal plate.

BIONOMICS: The adults were captured in vegetation near a river. The larvae were collected from tree holes, nipa axils and stumps, bamboo stumps, and artificial containers.

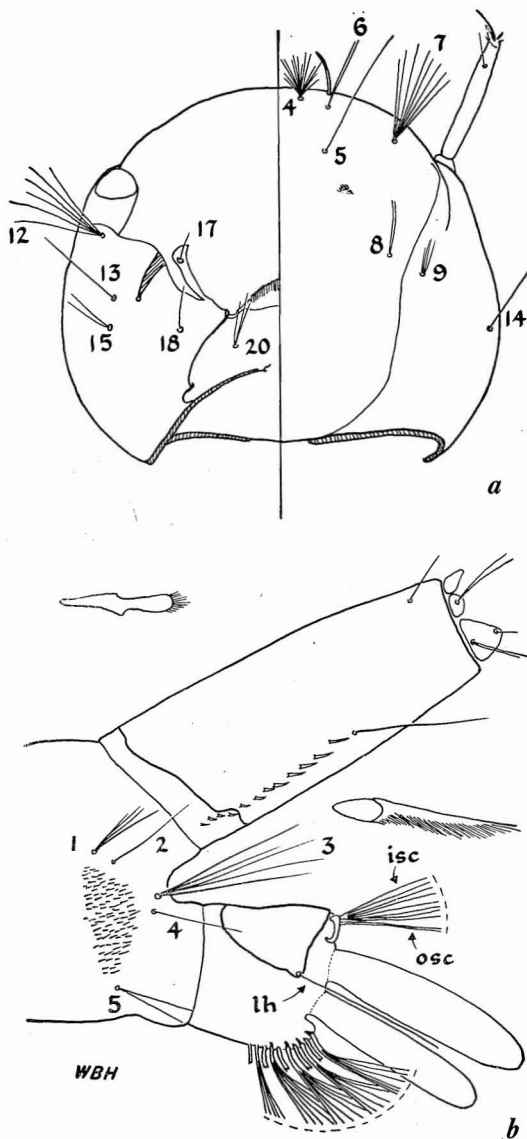


FIG. 2. *A. (Skusea) fumidus*. Larva (Luzon). a, Head; b, terminal segments.

DISTRIBUTION: *Specimens examined.* R.K.L. (many adults with assoc. skins). Luzon: Olongapo, Subic Bay, Zambales Prov. (Rozeboom, MacMillan).

Outside of the Philippines known from Malaya, Celebes, Boeton, and Kabaena.

DISCUSSION: This species has not previously been reported from the Philippines. The identification was confirmed by comparison of specimens with the type.

Subgenus *CHRISTOPHERSIOMYIA* Barraud

1923. *Christophersiomyia* Barraud, Indian Jour. Med. Res. 10: 786. Genotype: *thomsoni* Theobald (India).

ADULT: Ornate species. Distinct from the other Philippine subgenera by the combination of the following characters: short palpi in both sexes (slightly over a quarter as long as proboscis), white-marked proboscis, narrow scales on *apn*, banded hind tarsi, and undivided mesosome. Other characters: Scales of vertex and scutellum all broad. Scutum with white markings. No dorso-central, acrostichal, or prescutellar bristles. Paratergite scaled. Lower mesepimeral bristles present. Tarsal claws in both sexes small, all equal, and each unidentate. *Terminalia*: Basistyle with a slight basal lobe, no apical lobe. Dististyle appendage apical. Mesosome simple, not divided into toothed lateral lobes. No claspettes.

LARVA: Unknown for the single Philippine species. Described by Edwards (1932: 159) as follows: "Antenna spicular, with branched hair on shaft. Siphon index about 3; tuft near the middle; pecten evenly arranged; acus small or absent. Comb teeth in a single close-set row. Anal plate narrowly incomplete. Ventral brush short." Barraud (1934: 213) shows, for *thomsoni* (Theobald), head hairs 4, 6, and 7 roughly on a horizontal level, with hair 5 nearly directly posterior to 6. Habitat—tree and rock holes.

DISTRIBUTION: Confined to the Oriental Region. Three species are known from India and Ceylon, and one from the Philippines.

SYSTEMATICS: The four known species are so closely related as to suggest that they form either a polytypic species or a superspecies. Even so, a subgeneric position is desirable for them because of their markedly isolated position within the genus *Aedes*.

Aedes (*Christophersiomyia*) *brayi*
Knight

1947. *Aedes* (*Christophersiomyia*) *brayi* Knight,

Biol. Soc. Wash., Proc. 60: 73 (male, female). Type locality: Philippines. San Jose, Nueva Ecija Prov., Luzon (Bray). Type: Male (holotype) in U.S.N.M.† *Terminalia* mounted.

DISTRIBUTION: *Specimens examined*. Known only from the type series of one male and one female. Luzon: San Jose, Nueva Ecija Prov.

DISCUSSION: *A. brayi* differs from the other known species of *Christophersiomyia* on the markings of the proboscis, femora, tibiae, and tarsi.

The larva is unknown.

Subgenus *GEOSKUSEA* Edwards

1929. *Geoskusea* Edwards, Bul. Ent. Res. 20: 342. Genotype: *fimbripes* Edwards (New Britain).

ADULT: Male palpi either about one fourth as long as the proboscis, or else approximately two thirds as long. Scales on vertex, and usually those on the scutellum also, broad and flat. Dorsocentral and acrostichal bristles present. Paratergite not scaled. Lower mesepimeral bristles absent; however, numerous fine hairs present on one or more of the pleural sclerites. Fore and mid-tarsal claws of male unequal, the larger claw of fore legs bidentate and the smaller claw unidentate, both mid-tarsal claws unidentate; hind tarsal claws equal, simple. Female tarsal claws equal, simple. *Terminalia*: Basistyle long and slender, with a more or less detached subbasal or median setose lobe. Dististyle appendage apical. Mesosome simple, scoop-like as in *Ochlerotatus*. Claspettes absent.

LARVA: Unknown for the single Philippine species. The larvae of *daggyi* Stone and Bohart from the New Hebrides and *kabaenensis* Brug from the Celebes have been described and have the following characters: Antennal hair 2-4 branched, inserted near the middle. Head hair 6 placed slightly posterior to level of 7, 5 quite near to 6 and obliquely mesad and posterior to it, 4 near the midline and on or near to a level with 6. Comb scales numerous,

in a patch. Siphon with an acus; hair tuft branched and beyond middle; pecten teeth evenly arranged. Ventral brush of 12 tufts. Habitat—crab holes.

DISTRIBUTION: The seven known species are confined to the Australasian and Oriental Regions. Only two species are recorded from the Oriental Region, one from the Celebes and one from the Philippines.

SYSTEMATICS: The systematics of this subgenus have been discussed by Knight and Hull (1951). They list the following species as belonging here: *fimbripes* Edwards, *longiforceps* Edwards, *tonsus* Edwards, ? *daliensis* (Taylor), *daggyi* Stone and Bohart, *kabaenensis* Brug (formerly placed in *Skusea*), and *baisasi* Knight and Hull.

Aedes (Geoskusea) baisasi Knight and Hull

1951. *Aedes (Geoskusea) baisasi* Knight and Hull, Pacific Sci. 5: 197 (males, females). Type locality: Philippines. Iwahig Penal Colony, Palawan Island (Laffoon). Type: Male (holotype) in U.S.N.M.† Terminalia not separated.

DISTRIBUTION: *Specimens examined.* Palawan: Iwahig Penal Colony. Mindanao: Zamboanga, City of Zamboanga Prov. Mindoro: nr. Mangarin Bay, San Jose. Samar: Pintanon and Osmena.

DISCUSSION: *A. kabaenensis* Brug from the Celebes is closely related to *baisasi*, differing from it mainly in possessing only 1–3 thick setae and 1–2 bristles on each lobe of the ninth tergite, and in having the slender elongate hairs of the basal lobe of the basistyle confined to the apex of the lobe. It seems likely that when more material is available, *kabaenensis* and *baisasi* will prove to be members (subspecies) of a single polytypic species.

A. baisasi and *kabaenensis* differ markedly from the other known *Geoskusea* species in having the male palpi approximately two thirds as long as the proboscis. Also, con-

spicuous differences occur in the male genitalia.

The larva is unknown.

Subgenus RHINOSKUSEA Edwards

1929. *Rhinoskusea* Edwards, Bul. Ent. Res. 20: 342. Genotype: *longirostris* Leicester (Malaya).

ADULT: A small dark unornamented species. Differs from all the other *Aedes* species in the Philippines in having the first hind tarsal segment as long as, or longer than, the tibia. Palpi in both sexes very short. Scales of vertex and scutellum all broad and flat. Dorsocentral and acrostichal bristles present. Paratergite not scaled. No lower mesepimeral bristles. Male with tarsal claws slightly unequal on all legs, the larger bearing a small basal tooth; female claws equal and simple on all legs. **Terminalia:** Basistyle with basal and apical lobes. Dististyle appendage apical. Mesosome simple. Claspettes absent.

LARVA: Antennal hair tuft with 4–7 branches. Comb with 50–75 scales arranged in a patch. Siphon with an attached acus, pecten evenly arranged, hair tuft inserted near apex. Anal plate incomplete. Ventral brush with 10 tufts, all but basal one borne on a barred area, this area not connected laterally. Habitat—crab holes and brackish ground pools.

DISTRIBUTION: The one known species occurs in both the Australasian and Oriental Regions.

Aedes (Rhinoskusea) longirostris
(Leicester)

Figs. 3, 4

1908. *Ficalbia Longirostris* Leicester, Cul. Malaya, p. 228 (males, females, larvae). Type locality: Malaya. Kuala Klang (Leicester and Daniels). Type: 2 males, 4 females (cotypes) in B. M.†
1919. *Uranotaenia billi* Taylor, Linn. Soc. N. S. Wales, Proc. 43: 841 (2 males). Type locality: Australia. Darwin, Northern Terri-

tory (Hill). Type: Male (holotype) probably in School of Public Health and Tropical Medicine, University of Sydney.

1924. *Aedes* (*Skusea*) *longirostris* (Leic.). Edwards, Bul. Ent. Res. 14: 391. Synonymy of *hilli*.

Adult and larva described by Edwards (1929: 342) and Barraud (1934: 216), and the larva by Edwards (1926: 120).

ADULT: A small dark species without conspicuous markings. Abdomen of female with basolateral pale patches on some segments.

Male. Wing length approximately 1.9–2.1 mm. **Head:** Proboscis dark-scaled; distinctly longer than the fore femur. Palpus dark, only about one eighth as long as the proboscis. Torus bare of scales, however a few hairs may be present. Vertex with broad dark scales, some broad pale scales laterally, and a line of pale scales along eye margin (usually inconspicuous); a row of dark upright-forked scales along the nape. **Thorax:** Scutum with brown scales. Scutellar lobes with broad dark scales. *Apn*, *ppn*, and pleuron bare of scales; no lower mesepimeral bristles; pleural sclerites grayish brown. **Legs:** Dark, femora partially pale posteriorly. Tarsal claws of all three legs with one slightly larger than the other, the larger claw in each case bearing a slender small tooth near the base (can be seen only on a slide mount). **Wings:** Dark-scaled. Halter stem pale, knob darker and with dusky scales. **Abdomen:** Tergites brown-scaled, lateral margin of I usually with a few dark scales. Sternites brown-scaled. **Terminalia:** Basistyle with a hairy lobe near apex and with two large processes arising basally from the inner surface. Dististyle hairy on apical one third and with a small double appendage. Mesosome simple. Ninth tergite without setae.

Female. Wing length 2.1–2.7 mm. Resembles the male in all details except that basolateral pale patches are present on some of the tergites. Also, the tarsal claws are all equal and simple.

LARVA: **Head:** Antenna spiculated, broadest



FIG. 3. *A. (Rhinoskusea) longirostris*. Male terminalia (Samar).

at base and gradually tapering to apex; antennal hair tuft with 4–7 branches, inserted beyond middle and extending to beyond apex of antenna. Hair 4 very small, with 3–5 branches; 5 with 5–7; 6 double; 7 with 8–14; 8 with 2–3; 9 with 2–4; 12 with 3–7; 13 double, rarely with 3; 14 with 2–3; 15 small, double, occasionally with 1–3; 17 single; 18 single, rarely double; 20 with 2–4. Mentum with 9–12 lateral teeth. **Thorax:** Prothoracic hairs 1, 2, and 3 all single. Mesothoracic hair 9 with 5–7 branches; 10 and 12 single, long, stout; 11 single, very small. Metathoracic hair 9 with 2–3 branches; 10 single, long, stout; 12 single, much reduced; 11 single, very small. **Abdomen:** Dorsolateral hairs on I and II with 3 branches, rarely 2–4. Lateral hair on I single; on II small, with 2–4 branches; on III–VI double, rarely with 3 branches. Pentad hair 1 with 3–6 branches; 2 and 4 single; 3 with 4–9; 5 with 9–13. Comb of 50 to 75 scales in a triangular patch,

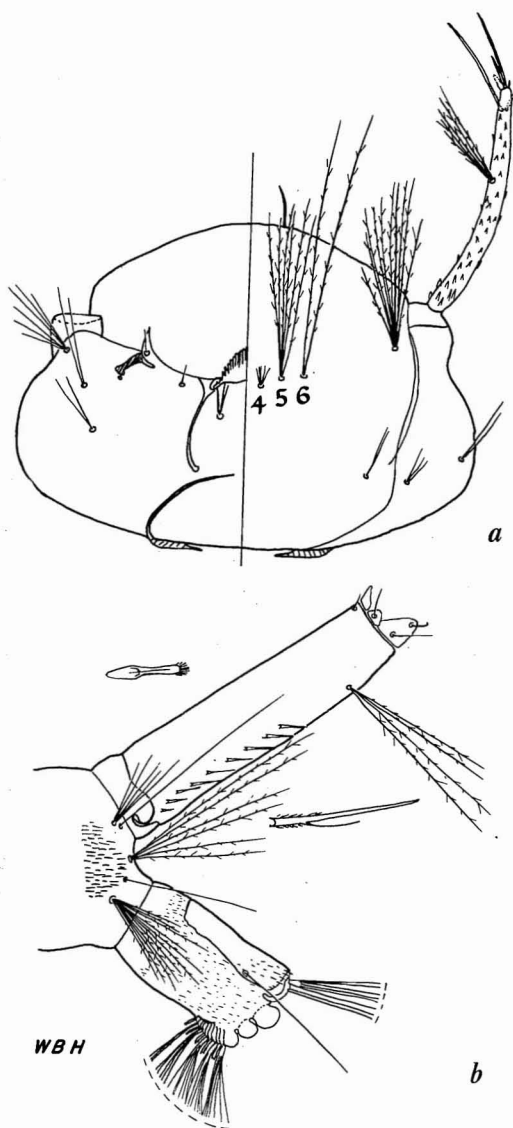


FIG. 4. *A. (Rhinoskusea) longirostris*. Larva. *a*, Head (Samar); *b*, terminal segments (Balabac).

the scales with blunt fringed tips. Siphon smooth, with an attached acus, index 3.4–3.8; 8–15 pecten teeth, each tooth long slender and fringed along basal portion; siphon hair tuft with 5 branches, rarely 3–6, inserted near apex. Anal plate spiculated, covering little more than the dorsal area of the segment; *lb* single; *isc* with 3–6 branches, *osc* single; ventral brush of 10 tufts with 1 off the barred area basally, the tufts with 2–8

branches; barred area not connected laterally. Anal gills small and bulbous, subequal, the dorsal pair 0.15–0.24 as long as anal plate.

BIONOMICS: The adults were found resting in crab holes. The larvae were collected from brackish pools in swamps and near the beach, from brackish water in a beached boat, from a tin plate in a grassy area, and from a depression on a fallen log. The larvae were collected from brackish water in crab holes on Mindoro by E. S. Ross. Causey (1937: 413) reported a larval collection from a brackish rock pool in Siam.

DISTRIBUTION: *Specimens examined.* R. K. L. Samar: 3 males, 8 females, 19 sets assoc. skins, Pintanahon, nr. Osmena (Laffoon). Mindanao: 1 male, 2 females, Zamboanga, City of Zamboanga Prov. (Laffoon, Knight). Palawan: 1 female, Iwahig Penal Colony (Laffoon). Larvae, Tacuburos (Fitzgerald). Balabac: 2 males, 1 female, larvae, Cape Melville (Laffoon, Johnson, Howell, Fitzgerald). Philippine Bureau Health Coll. Palawan: 2 males, 1 female, Iwahig (Nuno). C.A.S. Mindoro: 1 male, 1 female, 2 sets assoc. skins, nr. Mangarin Bay, San Jose (Ross).

Outside the Philippines it is known from northern Australia, Malaya, Siam, and the Andaman Islands.

DISCUSSION: This species has not previously been reported from the Philippines.

Subgenus *STEGOMYIA* Theobald

1901. *Stegomyia* Theobald, Mon. Cul. 1: 283.

Genotype: *fasciata* Fabricius.

1904. *Scutomyia* Theobald, Entomologist 37: 77. Genotype: *albolineata* Theobald (Australasian and Oriental Regions).

1908. *Pseudostegomyia* Ludlow, Mosq. Philippine Isls., p. 10. Genotype: *gardnerii* Ludlow (Philippines).

1925. *Catatastomyia* Dyar and Shannon, Insector Inscitiae Menstruus 13: 71. Genotype: *meronephada* Dyar and Shannon (Philippines).

ADULT: Dark species, with white markings on thorax and legs. Male palpi varying in

length from equaling the proboscis to being only one half as long; bare of hairs except for a few bristles at the apices of III-V; straight or with IV-V upturned. Scales on vertex and scutellum all broad and flat. However, in some species the vertex possesses a diamond-shaped medioanterior area of narrow white scales which extends anteriorly between the eyes. Acrostichal bristles absent, a few dorso-centrals present in some species. Paratergite with or without scaling. Lower mesepimeral bristles absent. Male tarsal claws unequal on fore and midlegs, unidentate (the smaller simple in *albopictus*); equal, simple on hind legs. Female tarsal claws equal; fore and mid simple or unidentate, hind simple. *Terminalia*: Basistyle without apical lobe (except in *m. var. perplexus*); basal lobe either a plaque on medial surface or a largely detached columnar structure, setose. Claspettes absent. Mesosome divided into two lateral plates, each of which bears numerous teeth laterally.

LARVA: Antennal hair with 1-5 branches. Head hair 5 posteriorly on or near to a longitudinal level with 6 and slightly posterior to the level of the antennal bases, 4 just anterior and mesad of 6, 7 slightly posterior to level of antennal bases. Comb teeth stout, thorn like, in a row. Siphon with acus present or absent; pecten teeth evenly spaced. Ventral brush with 8-12 single or double hairs (up to 6-branched in a few species, however), barred area may or may not be laterally connected (in *desmotes* the lateral bar is modified into a small plate). Habitat—a wide variety of natural and artificial container habitats (tree holes, bamboo stumps, leaf axils, etc.). One species is commonly found in rock pools.

DISTRIBUTION: Edwards (1932: 161) gives the distribution of this subgenus as follows: "Except that *A. aegypti* has been artificially spread by commerce, the subgenus *Stegomyia* is confined to the tropical and subtropical regions of the old world, chiefly the Ethiopian and Oriental Regions." At present 15 species and subspecies are known from the Philippines.

SYSTEMATICS: Edwards (1932: 161) divided the subgenus into four groups, of which all except Group D are represented in the Philippines. Knight and Hurlbut (1949: 26) raised the *albolineatus* complex to the status of a full additional group (Group E) and divided Group C into three subgroups.

Group A (*aegypti*-group: *Stegomyia* s. str.). Scutum with a pair of crescent-shaped, oval, or rounded patches of white scales in front of the anterior fossae, and with more or less distinct traces of one or two median pale lines. Dististyle with a terminal appendage. Paraprocts each with a prominent mesal ventral arm basally. Represented in the Philippines by *aegypti*.

Group B (*w-alba*-group). Scutal ornamentation various; usually patches of white or yellow scales are present, and these are seldom arranged as in Group A, and there is never a distinct narrow median white stripe. Dististyle appendage present or absent, if present it is terminal. Paraprocts without vertical arm near base, except in *desmotes*. Represented in the Philippines by *aurotaeniatus*, *desmotes*, *gardnerii*, and *meronephada*.

Group C (*scutellaris*-group). Scutum with a conspicuous white median line (this sometimes broadened anteriorly), but without large white patches. Dististyle appendage terminal. Paraprocts without vertical arm near base. Knight and Hurlbut (1949: 26) divided Group C into three subgroups as follows: Subgroup I, *scutellaris* s. str. Abdominal tergal markings with the more mesal portions sub-basal. Postspiracular scales lacking. Scutal longitudinal median line relatively slender. Pleural scale patches arranged into two rather well-defined longitudinal bands (not true of *gurneyi* Stone and Bohart). Represented in the Philippines by *paullusi* and *scutellaris*. Subgroup II, *albopictus*. Abdominal tergal markings basal. Postspiracular scales lacking. Scutal longitudinal median line relatively slender. Pleural scale patches not arranged in two well-defined longitudinal bands. Represented in the Philippines by *albopictus*. Sub-

group III, *mediopunctatus*. Abdominal tergal markings basal. Postspiracular area scaled. Scutal longitudinal median line quite broad. Pleural scale patches not arranged in two well-defined longitudinal bands. Represented in the Philippines by *mediopunctatus* var. *perplexus*.

Group D (*vittatus*-group) is not represented in the Philippines.

Group E (*albolineatus*-group). Similar to Group C but differing as follows: Vertex with a median anterior diamond-shaped area of narrow white scales. Pleuron with a single broad longitudinal band of broad white scales that begins on the propleuron and extends to the upper mesepimeron. Hind tarsi with only the first three segments marked or banded (occasionally a few white scales on IV). Dististyle appendage well-removed from apex. Represented in the Philippines by *albolineatus*, *arboricolus*, *bambusicolus*, *boharti*, *hoogstraali*, and *laffooni*.

Aedes (Stegomyia) aegypti (Linnaeus)
Fig. 5

1762. *Culex aegypti* Linnaeus, in Hasselquist's Reise nach Palestina, p. 470 (female?).

Type locality: Egypt. Type: Nonexistent.

1906. *Stegomyia fasciata persistans* Banks, Philippine Jour. Sci. 1: 996 (male, female).

Type locality: Philippines. Not specifically given, but the following listed: Manila, Negros Occidental, Iloilo (Banks). Type: Nonexistent. However, 2 males, 5 females coll. by Banks and labeled as *persistans* are in the U.S.N.M.

1911. *Duttonia alboannulis* Ludlow, Psyche 18: 132. Type locality: Philippines. Mindanao. Type: Female (lectotype) in U.S. N.M.† A subsequent selection by Dyar and Shannon (1925: 75).

Edwards, 1932: 161 (systematics). Bonne-Wepster and Brug, 1932: 13 (adult, larva, biology). Barraud, 1934: 221 (adult, larva, variations). Bohart and Ingram, 1946: 6, 11, 22, 27, 37, 66 (adult, larva, bionomics, Pacific distribution).

ADULT: A medium-size brown, or black, and white species; with a dark proboscis, hind tarsal segments I–IV each basally banded, hind tarsal segment V all white, the vertex scales broad except on the nape, the numerous white pleural scale patches not forming definite bands, and pale dorsobasal bands and separate lateral white spots on the tergites.

Male. Wing length about 2.5–2.7 mm.

Head: Proboscis dark. Palpus slightly longer than the proboscis, including the labella; II–V each with a basal white band, the bands on II–III incomplete ventrally and those on IV–V incomplete dorsally. Torus with broad white scales. Vertex with medial (this patch extending anteriorly to between the tori), subdorsal (a line of white scales connects this patch to the medial patch along the eye margin), and lateral areas of broad pale scales and with two alternating patches of broad dark scales; some narrow pale scales and a line of dusky upright-forked scales on the nape. *Thorax*: Scutum covered with narrow scales, all dark except for the following pale markings; 2 thin admedian longitudinal lines of narrow yellowish scales from near anterior margin to shortly before the prescutellar space, a small anteromedian spot of narrow pale scales, a rather broad crescent-shaped area of broad curved silvery scales on the lateral margin over *ppn* and along the scutal angle, a thin line of narrow white scales extending to the posterior margin from the end of the scutal angle, a patch of broad-curved white scales before the wing base with a thin posterior extension above the wing base, and some narrow pale scales around the prescutellar space. Scutellum covered with broad white scales, some apical broad dark scales on the mid-lobe. *Apn* with broad white scales, *ppn* with narrow dark and pale scales, a patch of broad white scales posteroventrally. Following pleural areas each with a patch of broad white scales: propleural, subspiracular (2 patches here, one being along the sternopleural margin and the other just anterior to the first), paratergite, prealar, dorsal sterno-

pleural, medioposterior sternopleural, and upper mesepimeral (over the upper two thirds and covering base of dorsal hair tuft, the whole patch being somewhat V-shaped and sometimes with a small interruption medially). *Legs*: Fore and mid-tarsi with basal white bands on I-II, sometimes also some basal pale scales on III of the mid-tarsus. Hind tarsus with basal white bands on I-IV, V all white; the bands on I-II covering about one third of the segment, on III two fifths, and on IV about three fourths. *Wing*: Dark-scaled. A small basal spot of white scales on the costa. *Abdomen*: Tergite I pale-scaled except for a subdorsal basal dark patch, III-VI with basal median white bands, apical pale scaling present on II-IV; I with a complete band of pale scales on the lateral margin, II-VII each with a basal or slightly subbasal white spot just before the lateral margin. *Terminalia*: Basistyle with a large heavily setose lobe on inner surface. Dististyle appendage apical. Claspette absent. Paraproct very distinctive in possessing a prominent mesal-ventrally projecting arm. Ninth tergite deeply cleft medially, the lobes each bearing a small tuft of short setae.

Female. Length of wing about 3 mm. Palpus approximately one sixth the length of the proboscis, apical half white-scaled. Clypeus dorsally with 2 spots of white scaling. Vertex frequently paler than in male, the subdorsal dark band being largely obliterated by pale scaling. Dark scutal scaling paler than in male, being yellowish brown. Tarsal claws equal, fore and mid each unidentate, hind simple. Tergite II with a few dorsal pale scales basally or sometimes even with a well-developed basal band; apical pale scales on all the tergites.

LARVA: *Head*: Antenna smooth, evenly shaped throughout; antennal hair single, small, inserted medially. Mouth brush with comb-like tips. Hair 4 with 4-7 branches; 5, 6, 7 (rarely double), 8, 9, 13, and 14 single; 12 with 2-3; 15 with 1-4; 17, 18, and 20 with 1-2. Mentum with 11-14 lateral teeth.

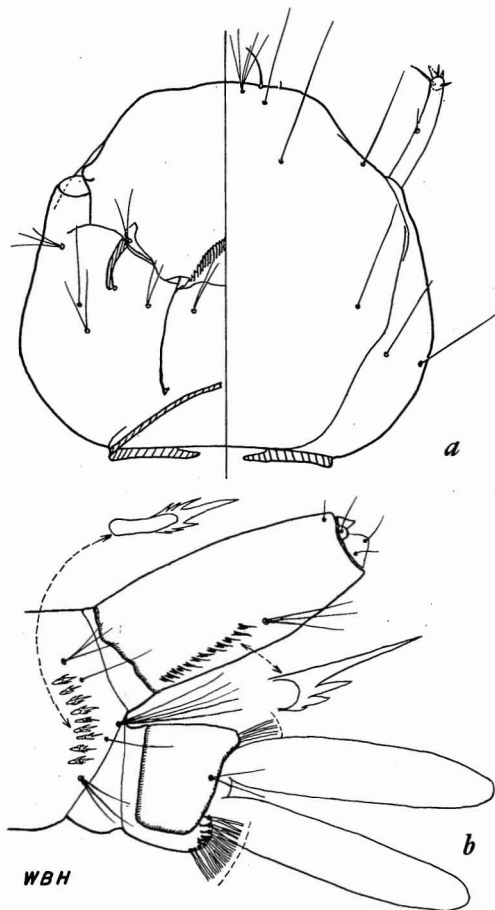


FIG. 5. *A. (Stegomyia) aegypti*. Larva (Mindoro). a, Head; b, terminal segments.

Thorax: Prothoracic hair 1 with 2-3 branches; 2 single; 3 double. Mesothoracic hair 9 with 2-3 branches; 10 and 12 single, long stout; 11 very small; a stout elongate curved spine at base of tubercle. Metathoracic pleural hair group similar to above except that hair 12 is reduced. *Abdomen*: Dorsolateral hair on I with 3-4 branches; on II with 2-3. Lateral hair on I single; on II to V double; on VI single or double. Pentad hair 1 with 3-4 branches; 2 and 4 single; 3 with 5-6; 5 with 2-5. Comb with 6-10 teeth, each tooth with prominent denticles at base of main shaft. Siphon smooth, without acus, index 2.5; 10-15 pecten teeth evenly spaced in a straight line, with ventral and occasionally dorsal denticles;

siphon hair tuft with 3 branches. Anal plate smooth, incomplete; *lh* single or double; *isc* with 2–3 branches, *osc* single; ventral brush of 10 tufts, each of which is forked near the base, all borne on a barred area; barred area may be partially connected laterally. Anal gills rounded at tips, subequal, approximately 3 times longer than anal plate.

BIONOMICS: In the Pacific portion of its range this mosquito apparently always occurs near habitations, the larvae almost always being found in artificial containers and the adults entering houses to bite humans. Bohart and Ingram (1946: 6) have presented an excellent review of the biology and disease relationships of this species in the Pacific areas.

DISTRIBUTION: *Specimens examined.* R.K.L. Luzon: 1 male, with assoc. skins, Olongapo (Santa Rita), Subic Bay, Zambales Prov. (Zedeck). U.S.N.M. Luzon: 7 males, Camp Stotsenberg, Pampanga Prov. (Parsons). Eight males, 1 female, Samal, Bataan Prov. 1 male, 2 females, Hagonoy, Bulacan Prov. 1 female, Manila, Manila Prov. 2 males, 4 females, Camp Elridge, Laguna Prov. Leyte: 3 males, Ormoc (Holliday). Panay: 1 female, Iloilo (McCoy). Cebu: 4 males, Cebu. Mindanao: 1 female, Cotabato, Cotabato Prov. (Holliday). 1 male, Pettit Barracks, Zamboanga, City of Zamboanga Prov. (Visaya, Conde). Mindoro: 7 males, Calapan. Jolo: 2 females, Jolo. C. C. Luzon: 7 males, 9 females, Agoo, LaUnion Prov. (Franclemont). A.N.S.P. Leyte: 7 males, 8 females, 4 larvae, Dulag (Roberts).

Literature records. Mindoro: Caminawit Pt. (Penn., 1948: 245). Leyte: Tolosa (Bick, 1949: 2). Panay: Guimeras Isl. (Ludlow, 1904: 233). Negros: Negros Occidental (Banks, 1906: 996).

Outside of the Philippines *aegypti* is known generally from the tropical and subtropical zones of the world.

DISCUSSION: The type of *alboannulus* is in fragments, and is so oiled as nearly to be unrecognizable.

Aedes (Stegomyia) aurotaeniatus

Edwards

1906. *Stegomyia aurostriata* Banks (nec Dole-schall, 1857), Philippine Jour. Sci. 1: 995 (females). Type locality: Philippines. Volcano Canlaon, Mt. Siya-Siya, at 760 m. alt., Negros Occidental Prov., Negros Island (Banks). Type: Female (cotype) in B. M.† Here designated lectotype (24-VI-06. 1908–243). Banks's types in Manila are nonexistent.

1922. *Aedes (Stegomyia) aurotaeniatus* Edwards, Indian Jour. Med. Res. 10: 256, 464 (nom. nov.).

ADULT: Scutum with a pattern of longitudinal golden lines. Tarsi all dark, except I of hind legs which has a basolateral dull white area.

Male. Unknown.

Female. Wing length 3.5 mm. *Head:* Proboscis dark. Palpus about one seventh to one eighth the length of the proboscis; dark. Torus scaled. Vertex broad-scaled, pale except for a large subdorsal dark patch; upright-forked scales on the nape. *Thorax:* Scutum brown-scaled, marked as follows: a very narrow median golden line, scarcely perceptible anteriorly, that is broadened posteriorly across the prescutellar space; a subdorsal golden band that bends outwardly anteriorly and inwardly posteriorly, tapered posteriorly; a short lateral stripe of golden scales before the wing base. Scutellar mid-lobe with a median patch of broad creamy scales bordered by dark brown ones, lateral lobes with a few mixed pale and dark scales. *Apn* with broad pale scales; *ppn* with some broad- and some narrow-curved pale scales. Following pleural areas each with a patch of broad creamy scales: propleural, subspiracular, postspiracular (continuous with subspiracular scales), paratergite, upper sternopleural, medioposterior sternopleural, and mesepimeral. *Legs:* Fore femur anteriorly dark except for a basal paler area and a ventrobasal pale line, posteriorly broadly pale basally, tapered to a

median pale line apically. Mid-femur anteriorly dark, posteriorly white except for a dorsal dark area on the apical half. Hind femur anteriorly white except for a dorso-apical dark marking, posteriorly with the apical two fifths dark. Tibiae all dark. Tarsi all dark, segment I of hind tarsi with a basolateral dull white area. Tarsal claws equal, those on fore and midlegs unidentate, simple on hind legs. *Wings*: Dark. Halter with dark-scaled knob. *Abdomen*: Tergites dark, very narrow basal pale bands on V–VII, large basolateral patches on I–VI (extending to apex of segments on I–III). Sternites white, narrow apical dark bands on some, VII–VIII all dark.

LARVA: Unknown.

BIONOMICS: The type series, all females, were taken while trying to bite the bare legs of native carriers.

DISTRIBUTION: Known only from the type locality.

DISCUSSION: This species has apparently not been retaken since Banks's type series was collected. There are five badly broken female specimens in the U.S.N.M., all of which bear Banks's determination label and which are presumably from the type locality, though not specifically labeled so.

Aedes (Stegomyia) desmotes (Giles)

Figs. 6, 7

1904. *Stegomyia desmotes* Giles, Jour. Trop. Med. 7: 367 (female). Type locality: Philippines. Camp Stotsenberg, Angeles, Pampanga Prov., Luzon (Whitmore). Type: Female (holotype) in B. M.†
1905. *Anisocheleomyia palbitarsis* Ludlow, Canad. Ent. 37: 131 (female). Type locality: Philippines. Camp Stotsenberg, Angeles, Pampanga Prov., Luzon (Whitmore). Type: Female (holotype) in U.S.N.M.†
1908. *Stegomyia gracilis* Leicester, Cul. Malaya, p. 81 (male, female). Type locality: Malaya. Ulu Klang jungle, Kuala Lumpur (Leicester). Type: Male (holotype) in B. M.†
1910. *Stegomyia albipes* Theobald, Indian

Mus., Rec. 4: 11 (female). Type locality: India. Maddathoray, Travancore (Anandale). Type: Female (holotype) in Ind. Mus.

1913. *Stegomyia desmotes* Giles. Edwards, Bul. Ent. Res. 4: 225. Synonymized *gracilis* and *albipes*.

1922. *Aedes (Stegomyia) desmotes* Giles. Edwards, Indian Jour. Med. Res. 10: 464. Synonymized *albitarsis*.

Barraud, 1934: 225 (adult, larva).

ADULT: A small black and white species. Tibiae each with a white band just before middle. Hind tarsi with basal bands on I–III, IV and V all white.

Male. Wing length approximately 2.0–2.5 mm. *Head*: Proboscis dark. Palpus somewhat longer than proboscis; dark, with basal bands on II–III and small ventrobasal patches on IV–V; slender, a few apical bristles on III–V. Torus with white scales. Vertex broad-scaled, white except for a large subdorsal and a smaller sublateral dark patch; a line of dark upright-forked scales on the nape. *Thorax*: Scutum black-scaled, anterior margin white-scaled, a pair of narrow subdorsal lines of white scales extending from anterior margin halfway to level of wing bases, a large white patch laterally before wing base which continues anteriorly along lateral margin, three short longitudinal pale lines between wing bases, the outer line of these often connecting with the patch before the wing base. No dorsocentral or acrostichal bristles. Scutellar lobes each with a patch of broad white scales. *Apn* with broad white scales; *ppn* with narrow white scales above, broad ones below. Following pleural areas each with a patch of broad white scales: propleural, subspiracular (2), postspiracular, paratergite, prealar, dorsal sternopleural, medioposterior sternopleural, mesepimeral, and meteusternal. *Legs*: Fore femur anteriorly dark except for a basoventral white line; mid-femur anteriorly dark, a white patch before middle, one beyond the middle, and one at apex; hind femur an-

teriorly white, a dorsal subapical dark marking present which may extend completely across surface to ventral margin. Tibiae dark, a white band on each just before middle, smallest on fore tibia. Fore and mid-tarsi with basal white bands on I-II; hind tarsus with broad basal bands on I-III, IV-V all white (may be a few apical dark scales on IV). Tarsal claws of fore and midlegs unequal, each unidentate; of hind legs equal, simple. *Wings*: Dark. Halter stem white, knob dark-scaled. *Abdomen*: Tergites dark, I with lateral margin white-scaled, II-VII with large basolateral white spots, III-VIII with basodorsal white bands (discontinuous from lateral markings). Sternites dark, with basal white bands. *Terminalia*: Basal lobe of basistyle with two setose lobes. Dististyle with long apical hairs, but without distinct appendage. Paraproct with small ventral arm. Ninth tergite flat medially, with small submedian hairy lobes.

Female. Wing length about 3.0 mm. Similar to male, but differing as follows: Palpus about one fifth as long as proboscis, apex white-scaled. Tarsal claws equal; each unidentate on fore and midlegs, simple on hind legs.

LARVA: *Head*: Antenna enlarged basally, the rest of the shaft evenly shaped throughout; antennal hair single, small, situated beyond middle. Mouth brushes with comb-like tips. Hair 4 with 7-10 branches; 5, 7, and 8 single; 6 with 2-4; 9 single or double; 12 with 2-3; 13 with 3-6; 14 single or double; 15 with 6-9; 17 with 2-5; 18 with 2-4; 20 single or double. Mentum with 11-13 lateral teeth. *Thorax*: Stellate hairs present. Mesothoracic hairs 9 and 10 single, stout, long; 12 shorter and more slender than 9 or 10; 11 about one fifth as long as 12, more slender. Metathoracic hairs 9-12 similar to the above except that 12 is reduced. An elongate bluntly tipped finger-like projection arises from the tubercle of the 9-12 hair group on the meso- and metathoracic segments, this projection being approximately

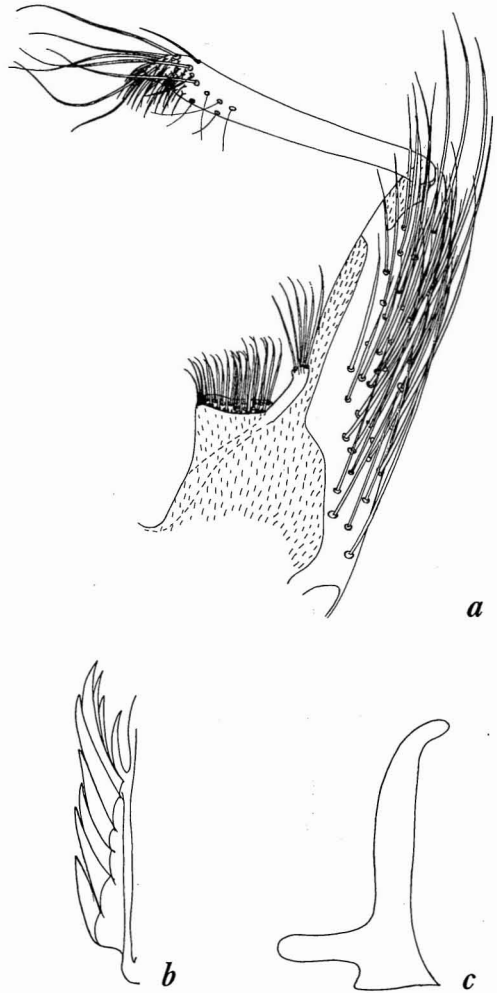


FIG. 6. *A. (Stegomyia) desmotes*. Male terminalia (Luzon). *a*, Tergal aspect of basistyle; *b*, lateral aspect of paraproct; *c*, dorsal aspect of left half of mesosome.

equal to hair 11 in length. *Abdomen*: Stellate hairs present. Pentad hair 1 with 2-3 branches, occasionally attached to comb plate; 2 and 4 single, 2 may also be attached to comb plate; 3 with 2-4; 5 with 2-3. Comb with 3-5 teeth arranged in a straight line on a pale plate; teeth long, stout, acutely tapered, with fine fringe laterally on attached portion. Siphon pale, no acus, index 1.6-2.5; 2-8 pecten teeth, small with fine denticles at base and occasionally on body of teeth; siphon hair tuft with 3-4 branches. Anal plate incomplete; *1b* with 2-4 branches, no longer than length

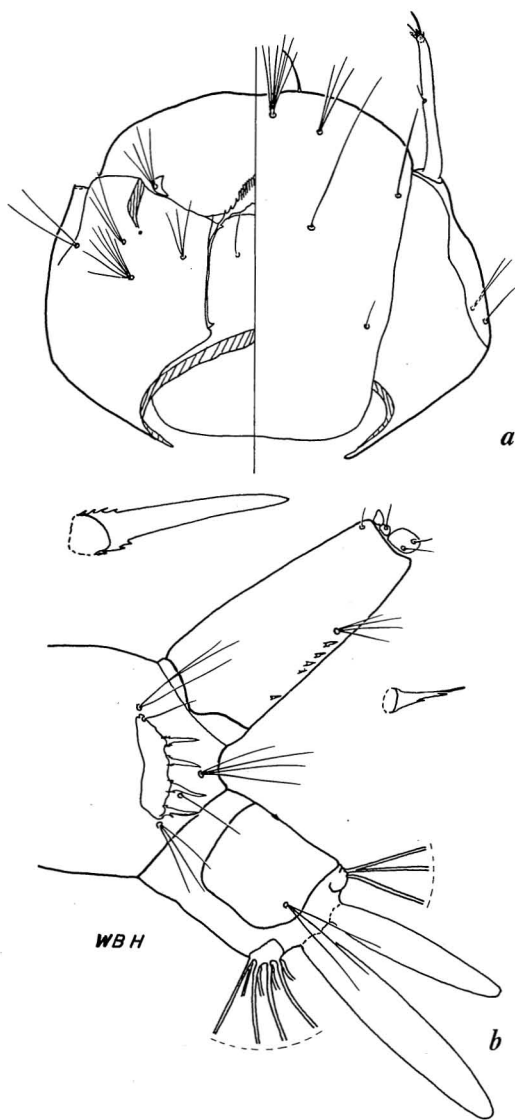


FIG. 7. *A. (Stegomyia) desmotes*. Larva (Luzon). *a*, Head; *b*, terminal segments. Drawn from exuvium.

of anal plate; *isc* double, *osc* single. Ventral brush of 8 single long hairs, all arising from a barred area; barred area connected to a prominently sclerotized plate on each side. Anal gills slightly tapered, rounded apically, ventral pair 1.3 times longer than the dorsal and 2.0 times longer than the anal plate (gills observed on only one specimen).

BIONOMICS: The adults were found resting in grass on one occasion and hovering about

humans on another. The larvae were collected from bamboo stumps.

DISTRIBUTION: *Specimens examined.* R.K.L. Luzon: 1 male, 6 females, 3 sets assoc. skins, Zig Zag Pass and Olongapo, Subic Bay, Zambales Prov. (Rozeboom, MacMillan, Zolick, Zedeck). A.N.S.P. Leyte: Tacloban (Roberts). U.S.N.M. Luzon: 1 male, Los Banos, Laguna Prov.

Outside the Philippines known from India, Assam, Malaya, Cochin China, Borneo, Beaton, and Soemba.

***a Aedes (Stegomyia) gardnerii* (Ludlow)**
Fig. 8

1905. *Stegomyia Gardnerii* Ludlow, Canad. Ent. 37: 99 (males, females). Type locality: Philippines. Bulacao, Mindoro (Gardner). Type: 2 males, 3 females (cotypes) in U.S.N.M.† The male with type label in Ludlow's handwriting is here designated lectotype. Terminalia not separated.

1907. *Quasistegomyia gardnerii* Ludlow. Theobald, Mon. Cul. 4: 168. Different combination.

1922. *Aedes (Stegomyia) gardineri* Ludlow. Edwards, Indian Jour. Med. Res. 10: 464. Lapsus.

Bonne-Wepster and Brügg, 1932: 71 (adult).

ADULT: A small black and white species. Posterior scutal scales broad. Hind tarsal segments all basally banded with white (V may be all dark).

Male. Wing length about 2.2 mm. **Head:** Proboscis dark. Palpus slightly longer than the proboscis; basal white bands on II–V, those on II–III incomplete ventrally and on IV–V incomplete dorsally; a few short stiff setae apically on III–V. Torus with broad silvery scales. Vertex all broad-scaled, marked with median, subdorsal, and lateral areas of broad white scales, a line of white scales along the ocular margin; a line of dark upright-forked scales on the nape. **Thorax:** Scutum dark-scaled, marked as follows: white scales along anterior margin, a broad subdorsal

band of narrow white scales from the anterior margin to the level of the wing base where it narrows and extends to posterior margin of scutum, a large patch of narrow-curved and broad white scales before the wing base that frequently connects with the subdorsal band, prescutellar area bounded by narrow pale scales, the dark and pale scales along the posterior margin of scutum all broad. No acrostichal or dorsocentral bristles. Scutellum with a patch of broad white scales on each lobe. *Apn* and *ppn* with broad white scales, some narrow dark scales dorsally on *ppn*. The following pleural areas each with a patch of broad white scales: propleural, subspiracular (2 patches present), postspiracular, paratergite, prealar (continuous with the dorsal sternopleural), dorsal sternopleural, medio-posterior sternopleural, mesepimeral, and meteusternal. *Legs*: Fore femur anteriorly dark, a basoventral line of white; mid-femur anteriorly with a medial white patch and a white band at the apex; hind femur anteriorly white, marked with a subapical dorsal dark area (may extend across to ventral surface on some specimens); some apical black scales present anteriorly on both hind and mid-femora. Tibiae anteriorly dark. Fore and mid-tarsi with narrow basal bands on I-II (may be obsolescent on II), hind tarsus with basal bands on I-V, that on IV and V dorsally not more than one half the segment (V may be all dark). Tarsal claws of fore and midlegs unequal, each unidentate; of hind legs equal, simple. *Wings*: Dark-scaled; a small basal white spot may be present on the costa. *Abdomen*: Tergite I with a lateral white band, IV-VI with basal white bands, III may have some mediobasal white scales, disconnected basolateral white spots on II-VII. Sternites with basal white bands. *Terminalia*: Basistyle elongate and slender, sternally greatly swollen on basal half; basal lobe with a prominently setose apex and with a small median mesally directed setose projection.

Female. Wing length 2.2-2.8 mm. Differs from male chiefly as follows: Palpus ap-

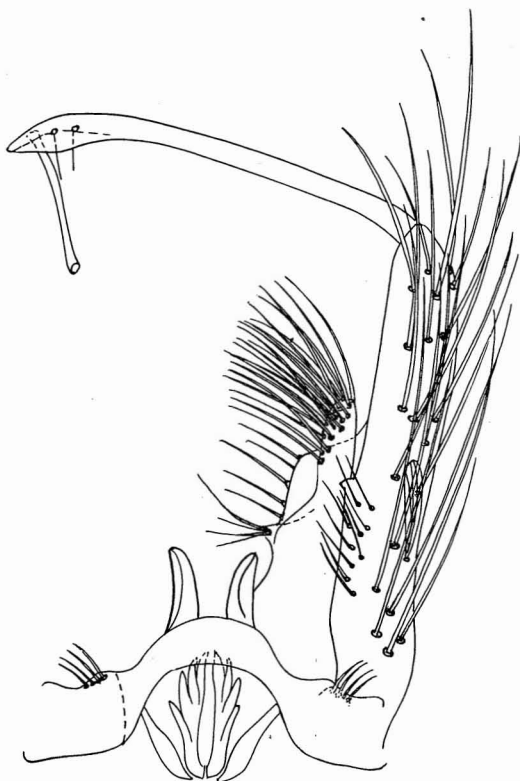


FIG. 8. *A. (Stegomyia) gardnerii*. Male terminalia (Luzon).

proximately one fourth as long as the proboscis, apex broadly white. Basal bands on hind tarsal segments IV and V occupying nearly all of the segment dorsally. Tarsal claws equal; each unidentate on fore and midlegs, simple on hind. Tergite II with a few mediobasal white scales, III basally banded.

LARVA: Head: Antenna smooth, of equal diameter throughout; antennal hair single, small, spine-like, inserted near middle. Mouth brush with comb-like tips. Hair 4 with 9-15 branches; 5 single, occasionally a fine branch or two at base; 6 double, rarely single, stalked; 7 double; 8 and 9 single; 12 with 2-4; 13 single, double on both sides on one specimen, 14 double, rarely single; 15 with 2-4; 17 with 2-5; 18 and 20 with 2-4. Mentum with 7-12 lateral teeth. *Thorax*: Prothoracic hair 1 with 3 branches; 2 single; 3 double. Mesothoracic hair 9 with 2-3 branches, stout, long; 10 and 12 single, stout, long; 11 single or double; a

small spine borne on the tubercle. Metathoracic pleural hair group similar to above except that 12 is much reduced. *Abdomen*: Dorsolateral hair on I with 2-5 branches; on II with 2-3. Lateral hair on I single or double; on II with 1-3 branches; on III to V single or double; on VI single. Pentad hair 1 with 2-4 branches; 2 and 4 single; 3 with 3-9; 5 with 3-5. Comb with 5-12 stout teeth in a row, each fringed at base. Siphon without acus, index 2.3-2.9; 8-17 pecten teeth in a row, the teeth with ventral and occasional dorsal denticles; siphon hair tuft with 2-4 branches, length less than width of siphon. Anal plate incomplete; *lh* with 2-3 branches, with a membranous area around point of attachment in anal plate; *isc* double, *osc* single; ventral brush of 8 single hairs (basal hairs occasionally double), with 2-3 off the barred area basally; barred area not connected laterally. Anal gills not clearly discernible in material available; best estimates of length 3.1 and 4.2 times longer than anal plate.

The larva of *gardnerii* is nearly identical with those of *scutellaris*, *albopictus*, and *paul-lusi*, differing only as given in the larval key.

BIONOMICS: Adults were collected hovering about humans and resting in woods and in nipa-palm areas. Larvae were collected on several occasions from bamboos and once from a hollow palm stump.

DISTRIBUTION: *Specimens examined*. R.K.L. Luzon: 7 males, 18 females, 1 larva, 20 sets assoc. skins, Olongapo, Zambales Prov. (Zolick, McMillan, Rozeboom). Mindanao: 2 males, 2 females, 1 larva, 1 set assoc. skins, Mercedes and Zamboanga (Laffoon, Johnson). Palawan: 1 male, Irahuan River (Johnson, Laffoon); 1 larva, Tacburos (Johnson). Culion: 1 male, 1 female, 2 larvae, Pilapil (Johnson, Laffoon). C.A.S. Mindoro: San Jose (Ross). A.N.S.P. Leyte: Tacloban (Roberts). C.C. Luzon: 3 males, 2 females, Agoo, LaUnion Prov. (Franclemont). U.S.N.M. Luzon: 1 male, Batangas, Batangas Prov.; 2 males, 1 female, Los Banos, Laguna Prov.; 1 male, 2 females, Pangpang, Sorsogon Prov.

(Cowell, Ingal); 2 males, 4 larvae, Balibago (Cowell, Ingal).

Literature records. Luzon: Los Banos and Angeles, Laguna Prov. Mindanao: Parang, Jolo. (Bohart, 1945: 62.)

Unknown outside the Philippines.

DISCUSSION: This species is closely related to *w-albus* (Theobald), which is rather widely distributed in the Oriental Region outside the Philippines. The male terminalia of the two species are apparently identical. The female of *w-albus* differs from *gardnerii* in having the white sublateral bands of the scutum broadly connected anteriorly and the fifth hind tarsal segment all dark. However, from the meager amount of material of *w-albus* that has been described in the literature, it is apparent that considerable variation in scutal and tarsal markings occurs; and it is quite possible that once the extent of this variation is known, these two species will prove to be similar, or at the most subspecies.

A Philippine female specimen of *gardnerii* was compared to the type (female) of *imitator* Leicester (a synonym of *w-albus* from Malaya) and was found to differ from it in the manner described above for *w-albus*. The larva of *w-albus* is undescribed.

Aedes (*Stegomyia*) *meronephada* (Dyar and Shannon)

Fig. 9

1925. *Catatastomyia meronephada* Dyar and Shannon, *Insector Inscitiae Menstruus* 13: 71 (16 females). Type locality: Philippines. Mt. Makilling, 1,500-2,000 ft. alt., Los Banos, Laguna Prov., Luzon (F. X. Williams). Type: 15 females (cotypes) in the U.S.N.M.† The specimen bearing the Mt. Makilling label is here designated lectotype.

ADULT: Scutum marked with an obovate anteromedian area of silvery scales. Hind tarsal segments I and II basally banded, III all white or nearly so, IV and V dark.

Male. Unknown.

Female. Wing length about 2.5-3.0 mm.

Head: Proboscis dark. Palpus about one sixth as long as the proboscis, dark. Torus with broad silvery scales mesally. Vertex broad-scaled, marked with a longitudinal median area and an ocular line of silvery scales and with a lateral pale patch; a line of yellow or brown upright-forked scales on the nape. **Thorax:** Integument ochreous. Scutum with small narrow dark-brown scales, marked with an obovate median patch of narrow silvery scales that begins at the anterior margin and extends posteriorly to about the level of the paratergite. No acrostichal bristles and only a few dorsocentrals. Scutellar mid-lobe with broad silvery scales, some of the apical scales black; lateral lobes with broad dark scales. *Apn* with narrow-curved silvery scales; *ppn* bare. Following pleural areas each with a patch of broad silvery scales: propleural, subspiracular, paratergite, dorsal sternopleural, medioposterior sternopleural, and mesepimeral. **Legs:** Fore and mid-femora dark anteriorly, apical white scales on the latter; hind femur anteriorly with basal three fifths and apex white, remainder dark. Tibiae dark. Fore and mid-tarsi dark, a small basal white patch on I; hind tarsal segments I–II with broad basal white bands, III all white or with as much as apical fifth dark, IV and V dark. **Wings:** Dark-scaled. Halter knob dark-scaled. **Abdomen:** Tergites dark, lateral margin of I silver-scaled, basolateral silvery patches present on II–VII. Sternites with basal white bands.

LARVA (description based on four specimens from Osmena, Samar): **Head:** A rounded prominence at eye margin. Antenna smooth, of equal diameter throughout; antennal hair double, inserted medially, reaching just beyond tip of antenna. Hair 4 fan-shaped, with 7–11 branches; 5 single; 6 double, branches equal, parallel; 7 with 5–8; 8 single or double; 9 with 2–4; 12 with 6–9; 13 single; 14 very small, single or double; 15 developed as a strong horn-shaped projection; 17 double or triple, very small and not always seen; 18 stalked, with 4–6; 20 with 2–4. Mentum with

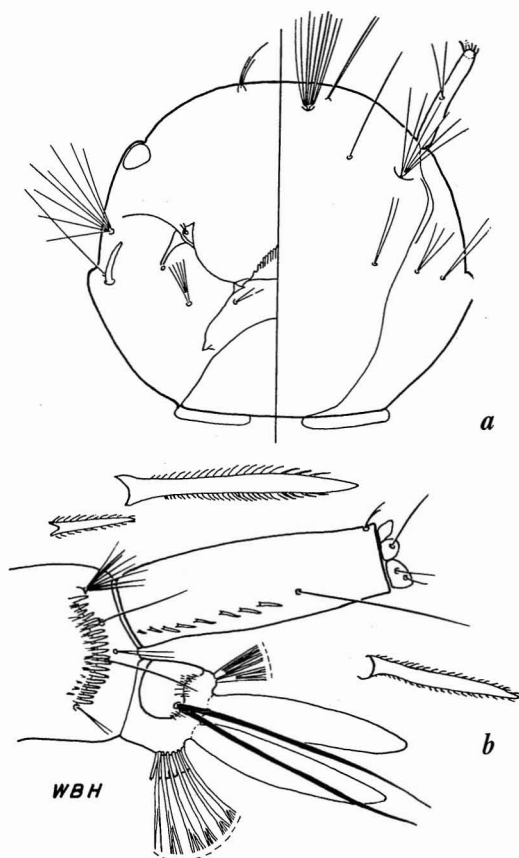


FIG. 9. *A. (Stegomyia) meronephada*. Larva (Samar). *a*, Head; *b*, terminal segments.

7–8 lateral teeth. **Thorax:** Prothoracic hair 1 double, one branch about one third longer than the other; 2 single; 3 with 19–22 branches. Mesothoracic hair 9 with 12–16 branches; 10 and 12 long, stout, single; 11 not seen; a sharp spine also borne on the 9–12 group tubercle. Metathoracic hair 9 with 5–9 branches; 10 long, stout, single; 12 single, much reduced; 11 not seen; a sharp spine also present on the tubercle. **Abdomen:** Dorso-lateral hair on I with 5–8 branches; on II with 6–8. Lateral hair on I single; on II with 4–7 branches; on III, IV, and VI with 4–5; on V with 3–4. Pentad hair 1 with 9–13 branches; 2 and 4 single; 3 with 2–3; 5 with 2–4. Comb with 18–24 long teeth in a row, a partial uneven second row of small teeth just anterior to large comb teeth; each tooth with a fine lateral fringe extending nearly to apex. Siphon

pilose, without acus, index 2.7–3.4; 7–11 smooth pecten teeth; siphon hair long, single (3-branched at three fifths of length in one specimen) extending beyond tip of siphon. Anal plate incomplete, with a patch of small spines along the posterior lateral margin; *lb* of two long, stout, equal branches borne on a tubercle; *isc* with 3 branches, *osc* with 2 or 3; ventral brush with 12 stalked tufts, each with 2–4 branches, barred area absent. Gills rather narrow, subequal, the dorsal pair (two specimens) 3.7–4.2 times longer than the anal plate.

BIONOMICS: Females were collected on one occasion resting at the base of trees in wet jungle at about 1,000 feet elevation. The larvae were collected once from the axils of a banana-like plant along a jungle stream at about 800 feet elevation. The axil spaces were small and held a very small amount of water.

DISTRIBUTION: *Specimens examined.* R.K.L. Samar: 1 female, 1 set assoc. skins, 5 larvae, Osmena, about 800 feet (Laffoon, Knight). Leyte: 3 females, Mt. Lobi, nr. Dagami (Laffoon, Knight). A.N.S.P. Leyte: Mt. Lobi, about 1,000 feet. Burugwan River, Tacloban (Roberts).

Unknown outside the Philippines.

Aedes (Stegomyia) albopictus (Skuse)

Fig. 10

1894. *Culex albopictus* Skuse, Indian Mus., Notes 3: 20 (3 females). Type locality: India. Calcutta, Bengal (Cotes). Type: Female (holotype) in University of Sydney, N. S. W. Edwards (1932: 164) indicates that this description was actually published in 1895.

1901. *Stegomyia scutellaris*. Walker. Theobald, Mon. Cul. 1: 298. Also: Banks, Philippine Jour. Sci. 3: 246. 1908. Leicester, Cul. Malaya, p. 86. 1908. Misidentifications.

1903. *S. scutellaris* subspecies *samarensis* Ludlow, Jour. N. Y. Ent. Soc. 11: 138 (males, females). Type locality: Philippines. Samar. Type: 2 males, 4 females (cotypes) in U.S.N.M.†

1904. *Stegomyia Lamberti* Ventrillon, Paris Mus., Bul. 10: 552 (males, females). Type locality: Madagascar. Majunga, Tananarive (Lambert). Type: Location unknown. Not found in Paris Museum by J. A. Reid in 1946.

1910. *Stegomyia nigritia* Ludlow, Canad. Ent. 13: 194 (2 females). Type locality: Philippines. Cotabato, Cotabato Prov., Mindanao. Type: 2 females (cotypes) in U.S.N.M.†

1911. *Stegomyia quasinigritia* Ludlow, Psyche 18: 129 (male). Type locality: Philippines. Turucan, Mindanao (Seith). Type: Male (holotype) in U.S.N.M.†

1917. *Aedes (Stegomyia) albopicta* Skuse. Edwards, Bul. Ent. Res. 7: 209. Synonymized *samarensis*.

1925. *Aedes (Stegomyia) albopictus* Skuse. Dyar and Shannon, Insecutor Inscitiae Menstruus 13: 74. Synonymized *nigritia* and *quasinigritia*.

1932. *A. (S.) albopictus* Skuse. Edwards, Genera Insectorum, fasc. 194, p. 164. Synonymized *lamberti*.

Barraud, 1934: 233 (description, systematics). Bonne-Wepster and Brug, 1932: 73 (complete treatment). Bohart and Ingram, 1946: 5, 35, 64 (description, systematics, biology).

ADULT: A black and white species, with a prominent median longitudinal silvery scutal stripe and basal abdominal bands. Hind tarsal segments I–IV basally banded, V all white.

Male. Wing length 2.0–2.5 mm. **Head:** Proboscis dark. Palpus slightly longer than proboscis; dark, segments II–V with basal white bands, those on II–III incomplete ventrally and those on IV–V incomplete dorsally; a few short stiff setae apically on III–V and along IV. Torus with silver scales. Vertex broad-scaled; marked with median, sub-lateral, and lateral areas of white scaling; dark upright-forked scales along the nape. **Thorax:** Scutum covered with narrow dark

scales, marked with a median stripe of narrow silvery scales which narrows posteriorly and forks at the prescutellar space, a posterior submedian silvery line, and a patch of broadened and narrow silvery scales over the wing base. Dorsocentral bristles present, acrostichal bristles absent. Scutellum with a patch of broad silvery scales on each lobe, the mid-lobe with a few black scales at the apex. *apn* and *ppn* with broad silvery scales, some narrow dark scales dorsally on *ppn*. The following pleural areas each with a patch of broad silvery scales: propleural, subspiracular, paratergite, dorsal sternopleural, medioposterior sternopleural, and mesepimeral (this patch covering the base of the mesepimeral hair tuft and approximately V-shaped), the scale patches not forming sharply defined lateral bands. *Legs*: Femoral knee-spots present, hind femur largely white-scaled anteriorly. Tibiae dark anteriorly. Fore and mid-tarsi with segments I and II basally banded, hind tarsus with basal white bands on I–IV, V all white. Tarsal claws of fore and midlegs unequal, the larger claw unidentate, the smaller simple; claws of hind legs equal, simple. *Wings*: Dark-scaled, a small basal spot of silver scales on the costa. *Abdomen*: Abdominal tergites with narrow (sometimes incomplete) basal bands which widen into spots sublaterally, detached oblique lateral spots also present. Sternites with basal white bands. *Terminalia*: Basistyle with prominent, setose basal lobe (arising medially). Ninth tergite produced medially into a distal blunt projection.

Female. Wing length about 3.0 mm. Palpus approximately one fifth as long as the proboscis, apical half white-scaled. Tarsal claws equal, simple.

LARVA (as in Fig. 13): Description from adult-associated larval skins. *Head*: Antenna smooth, evenly shaped throughout; antennal hair single, small, inserted medially. Mouth brush with comb-like tips. Hair 4 with 8–13 branches; 5, 8, 9, and 14 single; 6 and 13 single or double; 7 with 2–3; 12 with 2–5; 15

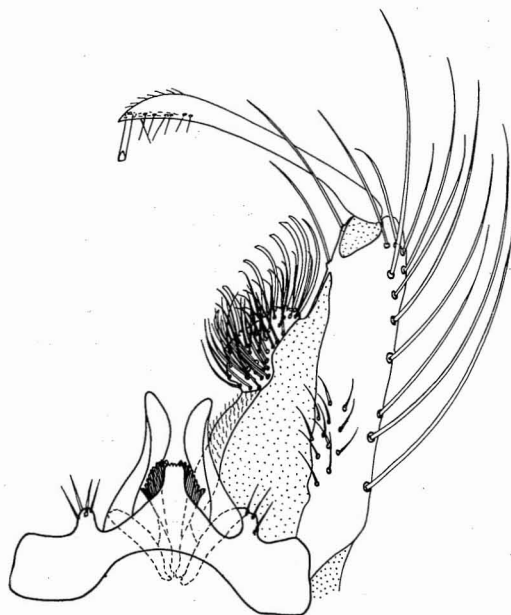


FIG. 10. *A. (Stegomyia) albopictus*. Male terminalia (Palawan).

with 2, rarely 3 or 4; 17 with 2–5; 18 with 1–3; 20 single or double. Mentum with 10–12 lateral teeth. *Thorax*: Stellate hairs present. Prothoracic hair 1 with 2–3 branches; 2 single; 3 double. Mesothoracic hair 9 double, rarely with 3 branches; 10 and 12 single, long, stout; 11 single, short. Metathoracic pleural hair group similar to above except that 12 is reduced. *Abdomen*: Stellate hairs present. Dorsolateral hairs on I and II with 2–3 branches. Lateral hair on I single; on II single or double; on III to V with 2–3 branches; on VI single or double. Pentad hair 1 with 2–3 branches; 2 and 4 single; 3 with 3–6; 5 with 2–3. Comb with 8–12 strong teeth, with denticles or fringes laterally on attached portion which may extend part way onto shaft. Siphon smooth, without acus, index about 2.0; siphon hair tuft with 2–3 branches, inserted near middle of siphon; 8–12 pecten teeth with ventral and occasionally dorsal denticles. Anal plate smooth, narrowly incomplete; *lb* with 2 unequal branches; *isc* double, *osc* single; ventral brush of 8 single hairs borne on a barred area; barred

area not connected laterally. Anal gills sausage-shaped, subequal, 2.0–4.5 times longer than anal plate.

Indistinguishable from *scutellaris* and *paullusi*.

BIONOMICS: Approximately 65 larval collections and numerous adult catches were made of this species in various portions of the Philippines. The larvae were commonly found in all types of artificial containers, even within occupied homes. Nearly as common were such natural containers as opened coconut shells and husks, fallen palm fronds, and sections of split bamboos. Less commonly, larvae were found in various types of tree holes and in cut bamboos. The adults were encountered everywhere in the vicinity of human habitations and would try to bite throughout the day under a variety of conditions.

DISTRIBUTION: *Specimens examined.* R.K.L. Luzon: Subic Bay, Zambales Prov. Leyte: Baybay; Tacloban. Samar: Osmena; Pintanahon; Ducong (on Basey River); Bulusao. Palawan: Tacburos; Puerto Princesa; Irahuan River; Iwahig Penal Colony. Culion: Pilapil. Balabac: Cape Melville. Busuanga: Coron. Mindanao: Zamboanga, City of Zamboanga Prov.; San Ramon, City of Zamboanga Prov.; Mercedes, Zamboanga Prov. Jolo: Jolo. C.C. Luzon: Agoo, LaUnion Prov.; Tayug, Pangasinan Prov. (Franclemont). C.A.S. Mindoro: San Jose (Ross). Leyte: Carigara; Tunga; Tacloban (Ross).

Literature records. Luzon: Banahao (Edwards, 1929a: 5). Leyte: Tolosa (Bick, 1949: 2). Panay. Negros. Guimaras. (Bohart, 1945: 61.)

Outside the Philippines this species is known from the Ethiopian Region and throughout the Oriental Region, and now occurs also in Saipan, Tinian, and Hawaii of the Australasian Region. The other records from the Australasian Region apparently refer to one or more of the *scutellaris* complex.

Aedes (Stegomyia) paullusi

Stone and Farnier

Fig. 11

1945. *Aedes (Stegomyia) paullusi* Stone and Farnier, Biol. Soc. Wash., Proc. 58: 155 (males, females). Type locality: Philippines. San Antonio, Samar (Paullus). Type: Male (holotype) in U.S.N.M.†

ADULT: A black and white species, marked with a prominent median longitudinal white scutal band and two distinct longitudinal pleural bands. Hind tarsal segments I–IV basally banded, V all white.

Male. Wing length about 2.2–2.5 mm. *Head:* Proboscis dark except for a stripe of pale scales extending almost entire length of ventral surface. Palpus approximately equal to proboscis in length; dark, with basal white bands on II–III and ventrobasal white patches on IV–V; a few short stiff setae apically on III–V. Torus ringed with white scaling. Vertex broad-scaled, a large subdorsal dark patch and a smaller lateral dark area, remainder white; dark upright-forked scales on the nape. *Thorax:* Scutum with narrow brown scales, marked as follows: A median white stripe from the anterior margin that narrows posteriorly and is faintly forked in the prescutellar area, an indistinct posterior submedian line of narrow yellowish scales, a patch of broad white scales over wing base, and a line of white scales along the anterolateral margin. Scutellum with broad white scales on all three lobes, a few dark scales apically on mid-lobe. *Apn* with broad white scales, *ppn* with some narrow-curved dark scales dorsally and an elongated patch of broad white scales below. Following pleural areas each with a patch of broad white scales: Propleural, dorsal sternopleural, ventroposterior sternopleural, paratergite, and mesepimeral (V-shaped). The white scale patches on *apn*, *ppn*, paratergite, and on the scutum over the wing base combine to form a sharply demarcated longitudinal white band; the white scale patches on propleuron, dorsal sternopleuron,

and mesepimeron (the dorsal arm of the V) form a second sharp longitudinal white band of scales ventral to the first. *Legs*: Fore femur dark anteriorly, marked with a somewhat interrupted white line on ventral surface and an apical patch of white scales; mid-femur anteriorly with a distinct median line of white scales which is separated from the apical white patch by dark scales; hind femur anteriorly with a broad white longitudinal stripe, this stripe widest at base and only slightly interrupted from apical white patch. Tibiae dark. Fore and mid-tarsi with a basal white patch on segments I–II; hind tarsal segments I–IV with basal white bands, V all white, the band on I occupying from one-fourth to one-third length of segment and interrupted on inner surface, on II about one third, on III about one half, on IV about two thirds or more. Tarsal claws of fore and midlegs unequal, each unidentate; of hind legs equal, simple. *Wings*: Dark, a small patch of white scales basally on costa. Halter knob dark-scaled. *Abdomen*: Tergite I with lateral margin white-scaled; II–VI with subbasal (more noticeable on posterior segments) narrow white bands, these turning abruptly caudad at dorsolateral margin and there ending near the large oblique dorsolateral spots (attached to these spots on at least one segment), the band on II interrupted; tergite VII, and sometimes VI, with the band broken on either side of a median patch. Sternites II–VI with basal white bands. *Terminalia*: Basal lobe of basistyle truncate, with a ventro-apical area of well-developed setae.

Female: Wing length 3.0–3.7 mm. Similar to male. Palpus about one-fifth length of proboscis, with large white patch on dorsal side of apical segment. Line of white scales on front femur absent or poorly developed. Tarsal claws equal, simple.

LARVA (as in Fig. 13): Description from adult-associated larval skins. *Head*: Antenna smooth, evenly shaped throughout; antennal hair single, short, inserted medially. Mouth brushes with comb-like tips. Hair 4 with 8–

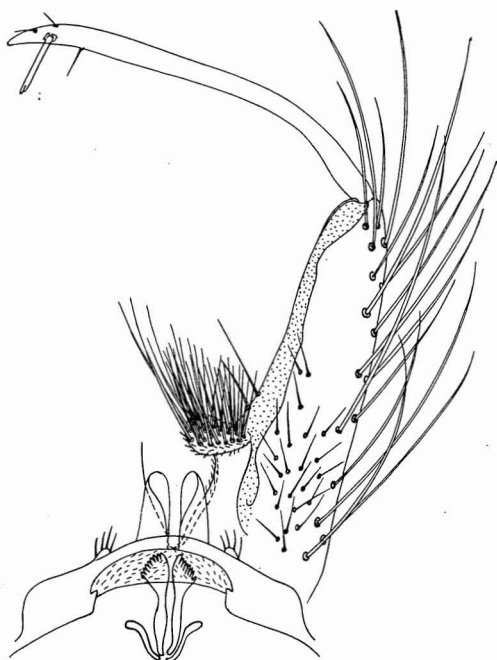


FIG. 11. *A. (Stegomyia) paullusi*. Male terminalia (Jolo).

11 branches; 5, 6, 8, 9, and 14 single; 7 with 2–3; 12 with 2–5; 13 single or double; 15 double; 17 with 2–7; 18 with 3–6; 20 with 2, rarely 1–5. Mentum with 10–13 lateral teeth. *Thorax*: Prothoracic hair 1 with 2–3 branches; 2 single; 3 double. Mesothoracic hair 9 with 2–3 branches; 10 and 12 single, stout, long; 11 single, small. Metathoracic pleural hair group similar to above, except that 12 is reduced. *Abdomen*: Dorsolateral hair on I with 3–4 branches; on II with 2–3. Lateral hair on I single; on II and III with 2–3 branches; on IV and V double; on VI single or double. Pentad hair 1 with 3–6 branches; 2 and 4 single; 3 and 5 with 3–7. Comb with 8–10 strong teeth in a row, each tooth with a lateral fringe on attached portion and extending onto shaft. Siphon smooth, without acus, index about 2.0; siphon hair tuft with 2–4 branches, inserted near middle of siphon; 9–17 pecten teeth each with 1 large and occasionally 1 or 2 very small ventral denticles. Anal plate narrowly incomplete, with a small area of spicules along the posterior median

margin; *lb* with 2 branches, rarely 1 or 3, equal or unequal in length; *isc* with 2-4, *osc* single; ventral brush of 8 single hairs borne on a barred area; barred area not connected laterally. Anal gills sausage-shaped, dorsal pair 2.5 times as long as anal plate and 1.2 times as long as ventral pair.

Indistinguishable from *albopictus* and *scutellaris*.

BIONOMICS: Adults were collected on several occasions hovering about humans in the woods. Numerous larval collections were made, being most commonly found in rock pools in drying stream beds. Other collections were from coconut husks, coconut shells, fallen coconut fronds, rot holes on fallen logs, a hollow on a palm trunk, and bamboos.

DISTRIBUTION: *Specimens examined.* R.K.L. Leyte: Dagami Mts., 1,000 ft. alt.; Tacloban. Samar: Osmena; Macarata; Pintanahon; Ducong; Shohoton Springs; Bulusao. Palawan: Irahuan River. Mindanao: San Ramon, City of Zamboanga Prov.; Zamboanga, City of Zamboanga Prov.; Mercedes, Zamboanga Prov. Jolo: Jolo. C.A.S. Leyte: Carigara; Santa Rosa; Tacloban (Ross).

Literature records. Calicoan: N'goles; Baras. Samar: San Antonio. Leyte: Abuyog. (Stone and Farner, 1945: 156.)

Outside the Philippines known from Taroenia, Sangir Islands; Celebes; Ceram; Ambon; Sanana; and Sumatra (Brug and Bonne-Wepster, 1947: 10).

***Aedes (Stegomyia) scutellaris* (Walker)** Figs. 12, 13

1858. *Culex variegatus* Doleschall (nec Schrank, 1781), Nat. Tijdschr. Nederland. Indië 17: 77 (female?). Type locality: Netherlands East Indies. Amboina. Type: Nonexistent, formerly in Vienna Museum (according to Barraud, 1934: 240).

1859. *Culex scutellaris* Walker, Linn. Soc. London, Proc. 3: 77 (male). Type locality: Aru (Aroe) Islands (Wallace). Type: Female

(holotype) in B.M.† Original description did not mention female.

1861. *Culex zonatipes* Walker, Linn. Soc. London, Proc. 5: 229 (male). Type locality: New Guinea. Dorey. Dutch New Guinea (Wallace). Type: Female (holotype) in B.M.† Identified as type by Waterhouse. Original description did not mention female.

1926. *A. variegatus* var. *hebrideus* Edwards, Bul. Ent. Res. 17: 102 (male, female). Type locality: New Hebrides. Hog Harbor, Espiritu Santo (Buxton). Type: Male (holotype) in B.M.† Terminalia separated.

Stone, 1947: 85 (systematics). Stone and Farner, 1945: 159 (adult key). Barraud, 1934: 240 (adult, larva). Farner and Bohart, 1944: 37 (adult, systematics). Forbes and Horsfall, 1946: 602 (bionomics). Penn, 1947: 43 (bionomics).

ADULT: Similar to *paullusi*, differing as follows: Proboscis dark. Scutum lacking the line of white scales on the anterolateral margin. Mid-femur with a broken ventral line of white scaling anteriorly but entirely lacking the median longitudinal line. Tergal bands more widely separated from base of segments, being from one fourth to two fifths the width of the segment removed. Male terminalia similar except that the basal lobe of basistyle is of a different form.

LARVA (as in Fig. 13): Description from adult-associated larval skins. *Head:* Antenna smooth, evenly shaped throughout; antennal hair single, short, inserted medially. Mouth brush with comb-like tips. Hair 4 with 8-12 branches; 5, 6, 8, 9, 13, and 14 single; 7 with 2, rarely 1-3; 12 with 3, rarely 2; 15 single or double; 17 with 2-4, usually 3; 18 single or double; 20 single or double. Mentum with 11-12 lateral teeth. *Thorax:* Prothoracic hair 1 with 2-3 branches; 2 single; 3 double, rarely single. Mesothoracic hair 9 with 2-3 branches; 10 and 12 single, long, stout; 11 single, small. Metathoracic hair 9 double; 10 and 11 similar to those on mesothorax; 12

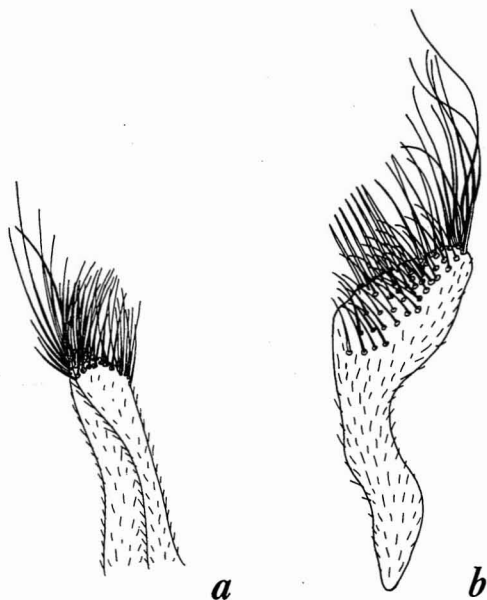


FIG. 12. *A. (Stegomyia) scutellaris*. Male terminalia. *a*, Tergal aspect of right basal lobe of basistyle (Luzon); *b*, lateral aspect of left basal lobe of basistyle (Mindanao).

much reduced. *Abdomen*: Dorsolateral hair on I with 3–4 branches, usually 3; on II with 2–3. Lateral hair on I single; on II–V double; on VI single. Pentad hairs 1 and 5 with 3–4 branches; 3 with 3–6; 2 and 4 single. Comb with 9–15 strong teeth in a row, each tooth with lateral fringe or denticles on attached portion which may extend onto basal one third of shaft. Siphon smooth, without acus, index 1.8–2.8; 9–15 pecten teeth with strong ventral denticles; siphon hair tuft with 3–4 branches. Anal plate incomplete; a few spicules along posterior median margin; *lh* with 2 unequal branches; *isc* double, rarely 1–3; ventral brush of 8 single hairs (occasionally double), borne on a barred area; barred area not connected laterally. Anal gills nearly subequal, dorsal pair about 3 to 5 times longer than anal plate.

Indistinguishable from *albopictus* and *paulusi*.

BIONOMICS: Adults were encountered hovering about humans in shaded areas in the vicinity of native habitations. Larval collections (10) were made from tin cans and

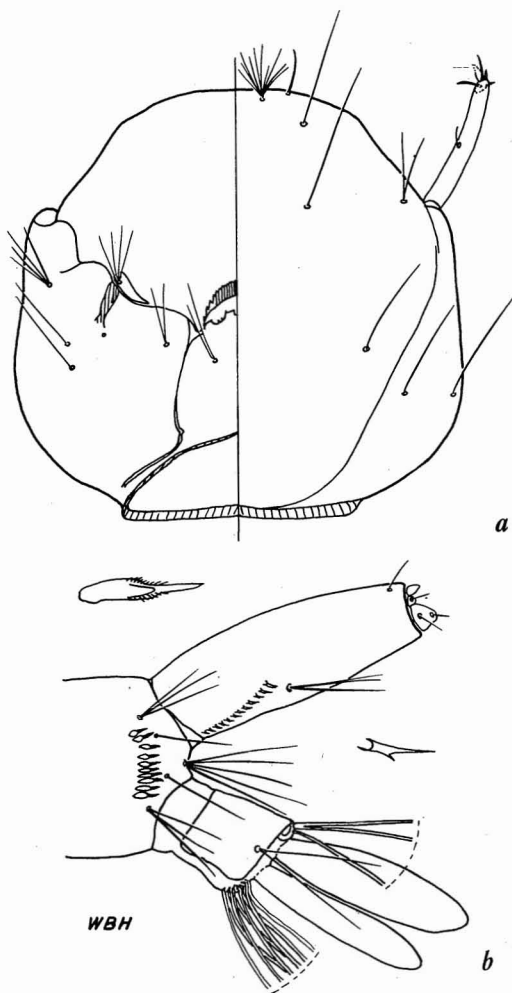


FIG. 13. *A. (Stegomyia) scutellaris* subgroup. Larva. *a*, Head; *b*, terminal segments.

similar containers; coconut shells, husks, and fallen fronds; tree holes and rot holes on fallen logs; and in a piece of split bamboo.

DISTRIBUTION: *Specimens examined*. R.K.L. Luzon: Olongapo, Subic Bay, Zambales Prov. (Zolick). Leyte: Tacloban (Roberts, Knight). Samar: Pintanahon (McMillan). Palawan: Irahuan River (Johnson, Laffoon, Fitzgerald); Tacbueros (Laffoon). Mindanao: Zamboanga, City of Zamboanga Prov. (Johnson, Laffoon, Knight). C. C. Luzon: Agoo, LaUnion Prov. (Franclemont). C.A.S. Mindoro: San Jose (Ross).

Literature records. Luzon: Los Banos, La-

guna Prov.; Camp Stotsenberg, Pampanga Prov. (Bohart, 1945: 62). Calicoan (Stone and Farner, 1945: 158).

Outside of the Philippines, this species is known from New Hebrides, Rennell and Bellona Islands, New Guinea, Sumatra, Aru, Amboina, Moluccas, Celebes, Ceram, Palau Islands, Andamans, and from several other small islands in the Dutch East Indies.

DISCUSSION: The type female of *scutellaris* has been examined by the senior author and found to be quite moldy; in addition, it is lacking all of both fore tarsi, segments II-V of the mid-tarsi, and segments III-V of the hind tarsi. Because of the absence of most of the tarsal segments, it was not possible to key this specimen beyond couplet 4 of Stone and Farner's (1945: 159) key to the adults of the *scutellaris* subgroup. However, it does differ rather markedly from *hebrideus* as defined in that key (and from *scutellaris* as described above for the Philippines) in tergal markings. The dorsum of the tergites is dark except for a single subbasal row of white scales on VI, a nearly complete subbasal row on V, and a short mesal extension of the subbasal lateral white stripe onto the dorsum on II-V and on VII. Nonetheless, there seems little doubt that the species formerly called *hebrideus* is actually true *scutellaris*, since Stone (1947: 85) has examined the terminalia of a topotypic male of *scutellaris* and found it to be identical with terminalia of specimens from the New Hebrides, New Guinea, and the Philippines.

The single female type specimen of *zonatipes* has been examined and found to be in very poor condition. The scutum, pleurae, and abdominal tergites are almost completely bare of scales and the mid-tarsi are missing. However, it was possible to key it to couplet 10 of Stone and Farner's (1945: 160) key, which takes it to either *pseudoscutellaris* or *hebrideus*. The rubbed condition of the tergites precludes further identification.

The male type of *hebrideus* was studied and was found to go satisfactorily to *hebrideus* in Stone and Farner's (1945: 160) key. The only

pertinent difference noted between this specimen and the type of *scutellaris* was the more complete condition of the abdominal bands, being as described in this paper for Philippine *scutellaris*.

Aedes (Stegomyia) mediopunctatus var. perplexus (Leicester)

Figs. 14, 15

1908. *Stegomyia Perplexa* Leicester, Cul. Malaya, p. 83 (male, female). Type locality: Malaya. Kuala Lumpur and The Gap (Leicester). Type: Male, female (cotypes) in B.M.†

ADULT: A black and white species, marked with a prominent median longitudinal white scutal band. Hind tarsal segments I-II basally banded, III all dark, IV-V all white.

Male. Wing length about 2.6 mm. Proboscis dark, often with some ventral white scaling. Palpus approximately equal to the proboscis in length; segments II-V with basal white bands, those on IV-V dorsally incomplete; a few short stiff setae apically on III-V. Torus with nearly complete ring of silvery scales. Vertex with broad white scales, marked by a large subdorsal area and a smaller sublateral patch of broad dark scales; a line of dark upright-forked scales on nape. **Thorax:** Scutum dark-scaled, with white markings as follows: a broad median longitudinal band tapering from anterior margin to the prescutellar space and then continued to posterior scutal margin, and a large patch of broad white scales over and before the wing base. Scutellar mid-lobe with broad white scales, lateral lobes with broad dark scales (occasionally a few broad white scales here). *Apn* and *ppn* with broad white scales. Following pleural areas each with a patch of broad white scales: propleural, subspiracular, postspiracular, paratergite, dorsal sternopleural, medioposterior sternopleural, and mesepimeral. **Legs:** Fore femur anteriorly dark except for a ventrobasal white line; mid-femur anteriorly dark except for a ventral white line

and an apical white patch; hind femur anteriorly white, with an apicodorsal dark area that extends narrowly across the anterior surface subapically. Tibiae dark, a ventrobasal white area present on fore and hind. Fore and mid-tarsi dark except for a basal band on I, may be a few basal pale scales on II; hind tarsus with broad basal bands on I–II, III all dark, IV–V all white. Tarsal claws of fore and midlegs unequal, each unidentate; of hind legs equal, simple. *Wings*: Dark-scaled, a small basal patch on the costa. Halter knob dark-scaled. *Abdomen*: Tergites dark, lateral margin of I with a band of white scales, II–VI with large laterobasal white spots, III–VI with narrow mediobasal bands. Sternites with basal white bands. *Terminalia*: Basistyle heavily scaled (omitted from figure), with a prominent apical setose lobe and a setose basal lobe. Dististyle strongly forked and bearing a number of hairs and bristles. Ninth sternite very large.

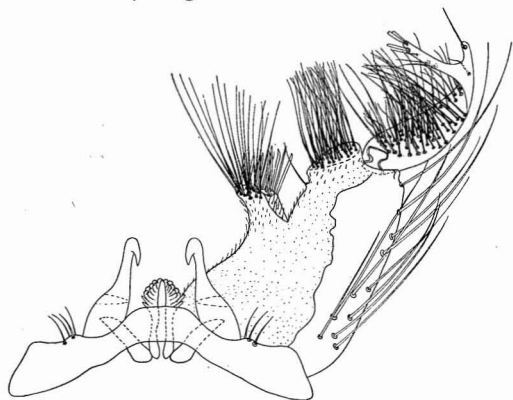


FIG. 14. *A. (Stegomyia) mediopunctatus* var. *perplexus*. Male terminalia (Palawan).

Female. Wing length about 2.8 mm. Similar to male except as follows: Palpus approximately one fourth to one fifth as long as the proboscis, apex broadly white. Tarsal claws equal, unidentate on fore and midlegs, simple on hind legs.

LARVA: *Head*: Antenna smooth, tapering slightly from base to apex; antennal hair single, small, spine-like, inserted medially or beyond the middle. Mouth brushes with

comb-like tips. Hair 4 with 5–8 branches; 5 single; 6 with 2; 7 with 2; 8 single; 9 with 1–3; 12 with 2–4; 13 with 1–2; 14 single; 15 with 2–4; 17, 18, and 20 with 2. Mentum with 10–12 lateral teeth. *Thorax*: Prothoracic hair 1 with 2–3 branches; 2 single; 3 double. Mesothoracic hair 9 single, long, stout, frayed; 10 and 12 single, as long as 9 but more slender and smooth; 11 single, small; a sharp spine on the tubercle that is about one half as long as 11. Metathoracic hair group similar to above except that 12 is much

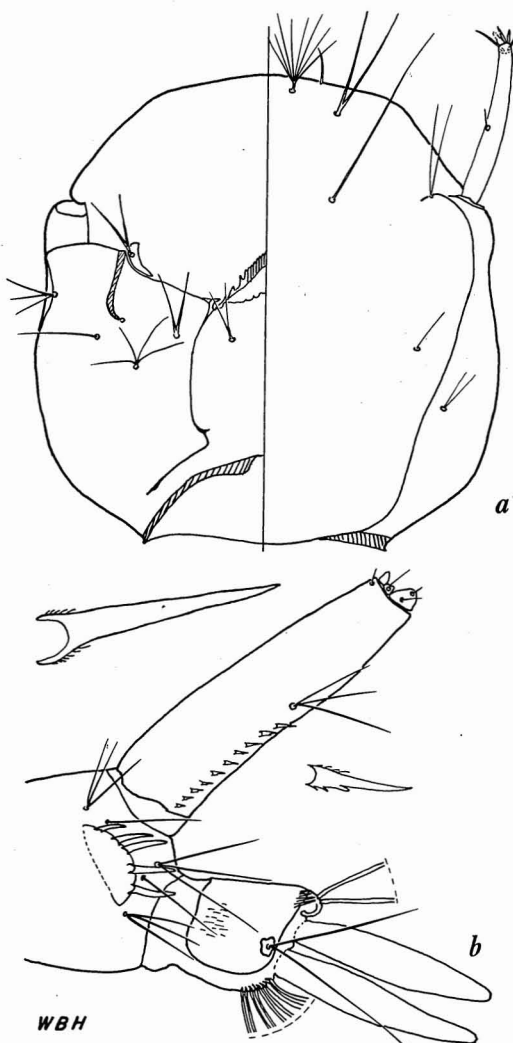


FIG. 15. *A. (Stegomyia) mediopunctatus* var. *perplexus*. Larva (Palawan). a, Head; b, terminal segments.

reduced. *Abdomen*: Stellate hairs present. Dorsolateral hairs on I and II double. Lateral hair on I single; on II–VI double, occasionally with 1 or 3 branches. Pentad hair 1 with 2–3 branches; 2 and 4 single; 3 with 3–4; 5 with 2–4. Comb with a row of 4–7 strong teeth on a sclerotized plate, teeth finely fringed at base. Siphon smooth, without acus, index 2.2–3.2; 5–15 pecten teeth in a straight or irregular row, each with 1 or 2 denticles and a fine fringe ventrally, sometimes also finely fringed dorsobasally; siphon hair tuft triple, length less than width of siphon (the siphon shown in Fig. 15 is abnormally narrow). Anal plate incomplete, with a small patch of spines laterally on the posterior dorsal margin, *lh* double, arising from a membranous area in plate; *isc* and *osc* single; ventral brush with 8 single stout hairs borne on a barred area, barred area may be weakly connected laterally. Anal gills rather narrow, bluntly rounded at tip, subequal, 1.5–1.8 times longer than anal plate.

BIONOMICS: Only three collections of this species were made, two adult and one larval. The adults were captured in open woods (one female was taken attempting to bite humans) and the larvae were collected from bamboos.

DISTRIBUTION: *Specimens examined*. R.K.L. Palawan: 5 males, 12 females, 4 sets assoc. skins, 10 larvae, Irahuan River (Johnson, Laffoon); 2 males, 7 females, Bacungan (Laffoon); 1 female, Puerto Princesa (Johnson, Laffoon).

Previously not reported from other than the type series.

DISCUSSION: The identification of the Palawan specimens was confirmed by direct comparison with the types.

According to Barraud (1934: 231), the type form, var. *submediopunctatus* Barraud, and var. *sureilensis* Barraud all differ from *perplexus* in having the fifth hind tarsal segment all dark (occasionally some pale scaling at the base only, however).

The varietal status assigned this mosquito by Barraud (1934: 231) is utilized here be-

cause of the lack of information sufficient to establish it either as a subspecies or as a full species.

Aedes (Stegomyia) albolineatus (Theobald)

Fig. 16

1904. *Scutomyia albolineatus* Theobald, Entomologist 37: 77 (female). Type locality: Malaya. Ampang jungle, nr. Kuala Lumpur (Leicester). Type: Female (holotype) in B.M.†

Barraud, 1934: 243 (adult, larva). Knight and Rozeboom, 1946: 84 (adult, pupa, larva, systematics).

DISTRIBUTION: *Specimens examined*. U.S. N.M. and R.K.L. Luzon: Olongapo, Lubid Pt., Grande Island, and Zig Zag Pass, all in Subic Bay area, Zambales Prov. Samar: Osmena; Shohoton Springs, Basey River. Balabac: Cape Melville. Mindanao: San Ramon, City of Zamboanga Prov.; Mercedes, Zamboanga Prov., Zamboanga, City of Zamboanga Prov. A.N.S.P. Leyte: Tacloban; Dagami; Burugwan River; Diit River, Tacloban (Roberts). B.M. Basilan (McGregor). C.A.S. Mindoro: San Jose (Ross).

Outside the Philippines, this species is

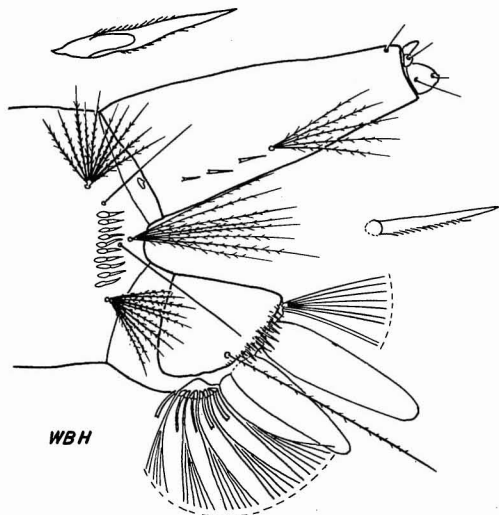


FIG. 16. *A. (Stegomyia) albolineatus*. Larval terminal segments (Luzon).

known from the Solomon Islands, New Guinea, Admiralty Islands, Borneo, Sangir Islands, Ceram, Saparoea, Krakatoa Group, Sumatra, Riouw, Venaten Island, Java, Celebes, Boeton, Kabaena, Soemba, Indo-China, Malaya, and Assam.

DISCUSSION: The type female was found to differ slightly from the Philippine material in having the subapical black area of the hind femur extended completely across the anterior surface, and in having all of the hind tarsal bands incomplete mesally.

Aedes (Stegomyia) boharti Knight and Rozeboom

Fig. 17

1932. *Aedes (Stegomyia) albolineatus* (Theobald). Bonne-Wepster and Brug, Geneesk. Tijdschr. v. Nederland. Indië 72: 60. Fig. 14, male terminalia. Also, in part, male description.

1946. *Aedes (Stegomyia) boharti* Knight and Rozeboom, Biol. Soc. Wash., Proc. 59: 90 (males, females, pupae, larvae). Type locality: Philippines. Osmena, Samar (McMillan and MacMillan). Type: Male (holotype) in U.S.N.M.† With assoc. larval and pupal skins. Terminalia separated.

DISTRIBUTION: *Specimens examined*. U.S. N.M. and R.K.L. Luzon: Olongapo, Lubid Pt., Grande Island, and Zig Zag Pass, all in Subic Bay area, Zambales Prov. Leyte: Balinasayao; Mt. Lobi, Dagami. Samar: Osmena. Palawan: Irahuan River; Bacungan. Culion: Pilapil. Balabac: Cape Melville. Mindanao: San Ramon, City of Zamboanga Prov.; Zamboanga, City of Zamboanga Prov.; Mercedes, Zamboanga Prov. A.N.S.P. Leyte: Lagolago, Baybay; Tacloban; Dagami (Roberts). U.S. N.M. Mindanao: Janga, Tugbok, City of Davao Prov. (Enke, Hoogstraal); Calinan, Davao Prov. (Enke, Hoogstraal); Beto, Dansalan, Dansalan City Prov. (Enke, Gutierrez, Corcega); nr. Lanao-Cotabato boundary along Parang-Malabang hwy. (Enke, Hoogstraal); Madaum, Davao Prov. (Werner); Parang (Paullus).

Outside the Philippines known only from an unnamed locality in the Netherlands East Indies (Bonne-Wepster and Brug, 1932: 60, as *albolineatus*, in part).

DISCUSSION: This species is very similar to *albolineatus*, some larval specimens being indistinguishable from that species. The adults may be distinguished by the presence of broad white scales ventrally on *ppn* of *boharti*. All of the *ppn* scaling is dark in *albolineatus*.

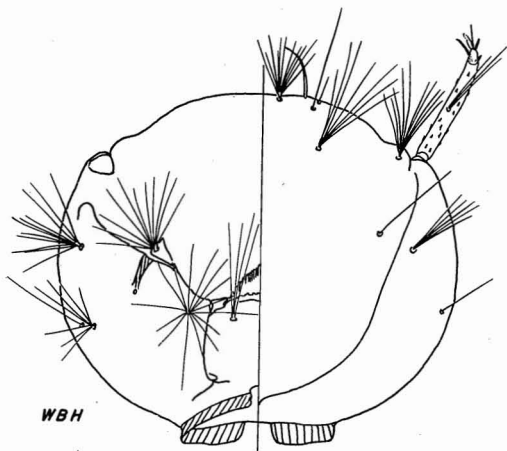


FIG. 17. *A. (Stegomyia) boharti*. Larval head (Mindanao).

Aedes (Stegomyia) sp. near boharti

In the U.S.N.M. there is a female specimen (P1157-2) with associated larval skin, reared from a rot hole at Madaum, Davao Prov., Mindanao (Werner, 16-X-46), that resembles *boharti* except for all three scutellar lobes being covered with broad black scales. The larva is Type D, *boharti*. Entered in the U.S. N.M. collection as *Stegomyia* sp. 44.

Aedes (Stegomyia) arboricolus Knight and Rozeboom

Fig. 18

1946. *Aedes (Stegomyia) arboricolus* Knight and Rozeboom, Biol. Soc. Wash., Proc. 59: 90 (males, females, pupae, larvae). Type locality: Philippines. Shohoton Springs, inland on Basey River, Samar (Knight). Type: Male (holotype) in U.S.N.M.†

With assoc. larval and pupal skins. Terminalia separated.

DISTRIBUTION: *Specimens examined*. Type series. Samar: Shohoton Springs, inland on Basey River.

Unknown outside the Philippines.

DISCUSSION: In the type description of this species it was stated that *arboricolus* was distinguishable from the type description of *pseudalbolineatus* Brug only on the basis of the markings of the third hind tarsal segment of the female. Since that time the senior author has had the opportunity of examining the type male and the allotype female of *pseudalbolineatus* in the British Museum. They were found to differ further from *arboricolus* in possessing an area of broad white scales on the lateral margin of the scutum just before the level of the wing base. The hind tarsi of the type male had the basal marking on I-II occupying about one fifth of the segment, and on III between one fifth and one fourth of the segment; in the female the basal marking on I occupies one fifth of the segment, on II one fourth, on III about seven eighths, one pale lateral scale on IV; none of the tarsal bands is complete medially. The scaling of

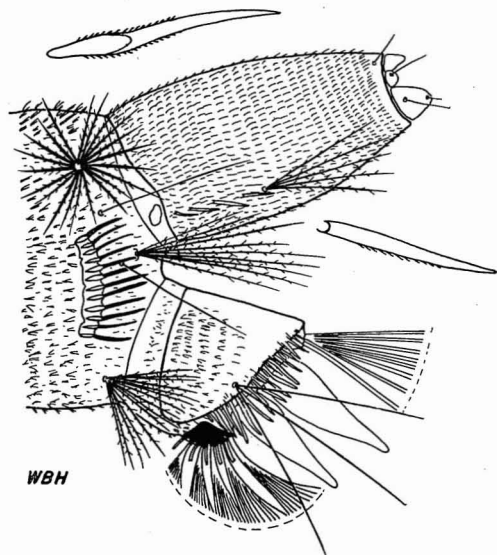


FIG. 18. *A. (Stegomyia) arboricolus*. Larval terminal segments (Samar).

the scutellum, *apn*, and *ppn* was largely similar to that of *arboricolus*. No differences in male terminalia were noted.

This species is closely similar to *laffooni* in the adult stage, differing most noticeably from it in the absence of broad white scales on the lateral margin of the scutum.

Aedes (Stegomyia) bambusicolus Knight and Rozeboom

Fig. 19

1946. *Aedes (Stegomyia) bambusicolus* Knight and Rozeboom, Biol. Soc. Wash., Proc. 59: 94 (males). Type locality: Philippines. Pilapil, Culion Island (Johnson and Laffoon). Type: Male (holotype) in U.S. N.M.† Terminalia separated.

Ross, 1950: 79 (male, female, pupa, larva, biology).

DISTRIBUTION: *Specimens examined*. U.S. N.M. Mindoro: 1 male, 1 female, 1 set assoc. skins, 2 larvae, Labangan River, nr. San Jose (Ross).

Unknown outside the Philippines.

DISCUSSION: The adult of this species may be distinguished from the other members of the *albolineatus* group by the combination of having all three scutellar lobes largely white-scaled and the median scutal stripe extending posteriorly to the scutum.

Aedes (Stegomyia) laffooni Knight and Rozeboom

1946. *Aedes (Stegomyia) laffooni* Knight and Rozeboom, Biol. Soc. Wash., Proc. 59: 94 (male, females). Type locality: Philippines. San Ramon, Mindanao (Laffoon). Type: Male (holotype) in U.S.N.M.† Terminalia separated.

LARVA: Several larval skins have become available since the publication of the type description of this species. The larva is apparently indistinguishable from *albolineatus* Type B larva, except that all ventral brush elements are borne on the barred area.

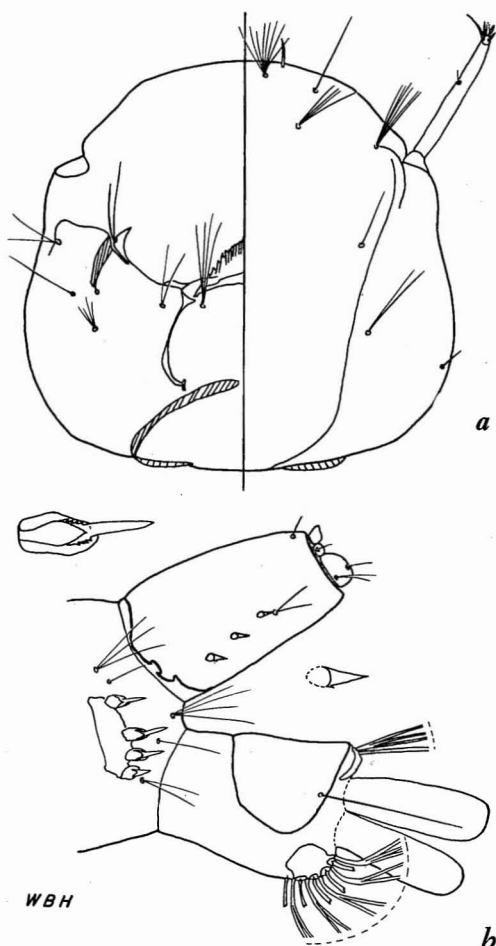


FIG. 19. *A. (Stegomyia) bambusicolus*. Larva (Mindoro). a, Head; b, terminal segments.

DISTRIBUTION: *Specimens examined*. U.S. N.M. Mindanao: San Ramon, Zamboanga Prov.; Maasin Village, City of Zamboanga Prov.; 2 sets assoc. skins, Sitio Taglawig, Tagum, Davao Prov. (Hoogstraal); 1 set assoc. skins, Lanao, nr. Lanao-Cotabato boundary along Parang-Malabang hwy. (Enke, Hoogstraal); 1 set assoc. skins, Matanao, Santa Cruz, Davao Prov. (Enke, Corcega).

Unknown outside the Philippines.

DISCUSSION: An examination of the type male and allotype female of *pseudalbolineatus* Brug in the British Museum showed it to be very similar to *lafoonii*. The only differences of any importance at all were in the markings of

the hind tarsi of the female. In *pseudalbolineatus* female, the basal band on hind tarsal III occupies seven eighths of the segment, and only one pale basal scale occurred on IV. It seems extremely likely that when more material is available from the Netherlands East Indies, from the Philippines, and from the intervening regions, these two will be found to be either synonyms or at the most only subspecies. As pointed out previously, this species is closely similar to *arboricolus*.

Aedes (Stegomyia) hoogstraali Knight and Rozeboom

Fig. 20

1946. *Aedes (Stegomyia) hoogstraali* Knight and Rozeboom, Biol. Soc. Wash., Proc. 59: 92 (males, females, pupae, larvae). Type locality: Philippines. Subic Bay, Zambales Province, Luzon (Zolick and Zedeck). Type: Male (holotype) in U.S.N.M.† With assoc. larval and pupal skins. Terminalia separated.

DISTRIBUTION: *Specimens examined*. U.S. N.M. Luzon: Subic Bay, Zambales Prov. Balabac: Cape Melville (Laffoon). Culion: 1 larva, Pilapil (Johnson, Laffoon). C.A.S. Mindoro: San Jose (Ross).

Unknown outside the Philippines.

DISCUSSION: While examining types in the British Museum, the senior author discovered that the female type specimen of *Culex imptabilis* Walker, which Edwards (1932: 162) had made a synonym of *aegypti*, is in actuality a member of the *albolineatus* complex. This specimen was identified as the type by E. A. Waterhouse and since Walker's description mentions only the male, there is some question as to the validity of this type specimen. This specimen, which is from Makassar, Celebes (Wallace), has the scutum badly rubbed, the legs entirely missing except the femur, tibia, and first tarsal segment of one hind leg, and all but the first two segments of the abdomen missing. However, sufficient scaling remains to key the specimen to *hoog-*

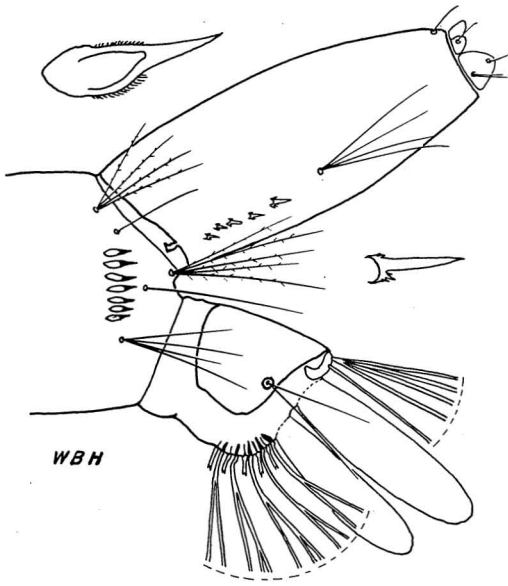


FIG. 20. *A. (Stegomyia) hoogstraali*. Larval terminal segments (Culion).

straali in the key given by Knight and Rozeboom (1946: 83) but not enough to differentiate the two. Until more material of this species is available from the Celebes, it will not be possible definitely to determine the status of *hoogstraali*. However, pending such an event the name *hoogstraali* is maintained for the Philippine material.

This species may be distinguished easily from all the other members of the *albolineatus* group by the narrow-curved creamy-white scales on *apn* and *ppn*.

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